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AIR CONDITIONING HEATING & REFRIGERATION NEWS

The Newspaper of the Industry

RESIDENTIAL — COMMERCIAL — INDUSTRIAL

May 30, 1960

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Joseph Elliot York President

YORK, Pa.—Joseph B. Elliot has been named president and general manager of York Div. of Borg-Warner Corp., effective June 1. He succeeds Henry Haase who is a vice president of Borg-Warner and who will assume new duties at the corporation headquarters in Chicago.

Elliot most recently has been president of Tele-Dynamics, Inc., manufacturer of special products used in the commercial field and also for defense applications, primarily in missile work. In 1954-1955 he was president of Schick, Inc.

Prior to becoming president of Schick, Elliot had been executive vice president in charge of all phases of the consumer products of RCA Victor Corp., comprising the air conditioning, radio, television, phonograph, record, and range departments. He supervised all product development and engineering, as well as distribution of these products.

Elliot has frequently expressed his conviction that "air conditioning is the next big growth industry—the one big consumer

(Continued on Page 4, Col. 5)

New Orleans Contractors Plan 'Vacation'

NEW ORLEANS—Start of a planned mass "vacation" by most of the local air conditioning and refrigeration contractors in protest against failure of the city council to pass a licensing law has been postponed until July 1, according to Philip J. Thompson, industry spokesman.

He said the proposed "walkout" was originally scheduled to run from June 1 to July 1 but was put off because some of the contractors had contracts which wouldn't be completed until after the original starting date.

Emphasizing that the "vacation" plan is not designed to hurt the public, Thompson said that "we're doing this only to impress upon the public how much they need this law."

He indicated that local residents would be asked not to call the contractors if they need service during the "vacation" period "but, instead, to complain to the city councilmen. Let the councilmen supply names of

(Continued on Page 4, Col. 4)

Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Gas Unlimited

As you can see by perusing this issue, the gas business is flexing its mighty muscles, and preparing to tackle all air conditioning competitors.

"Dope" has put in his two-bits-worth *re* that situation in the editorial on page 18.

So we'll confine further remarks on this score to a shock recently suffered by our long-time friend and boon companion, Fred Kaiser, who is vice president and general sales manager of Michigan Consolidated Gas.

An enormous electric sign on Detroit's John Lodge expressway reads:

GAS IS BEST

Imagine Fred's chagrin to find something new had been added. What he saw, while driving down the expressway was:

GAS IS BEST
FOR A LIMITED TIME ONLY

Upon horrified investigation, he found out that this booboo involved an intermittent flasher which should have read, simultaneously:

GAS IS BEST
DRYERS INSTALLED FREE
FOR A LIMITED TIME ONLY

On-the-ball Fred fixed that in a hurry.

Reminds us of a recent visit to the American Gas Association headquarters, located in a New York City skyscraper.

Managing director Chet Stackpole, who could outcharm Eisenhower even if he (Chet) had a toothache, is a great "prop" man.

Among the assorted cowbells, sirens, and other purposeful "props" in his office is a television set. The nameplate reads:

GAS IS BEST.

Gas television, yet!

'Who's Sorry Now?'

Undoubtedly the blight of "Rock and Roll" constituted the lowest, most miserable moment in the history of American popular music. But we elders can't turn up our noses too high. Remember?—

"Yes, We Have No Bananas."

"Cut Your Toenails, Grandpa, You're Tearing Up the Bedsheets."

"Wicka Wacka, Yicka Yacka, Do."

"Daddy, Hold the Lamp,

(Continued on Page 8, Col. 1)

Now Getting 5% of Residential Sales

Gas Air Conditioning Aiming For One of Every Four Sales

By Frank J. Versagi

DETROIT—**Gas air conditioning has a long way to go. But it is definitely on the way.**

"In 1959, the ratio of gas-to-electric central residential air conditioners sold was 1-to-17½;

"For 1960, it is entirely possible that we will hit a ratio of 1-to-9½.

"In the next four years the gas industry must get 294,000 of an estimated 1,184,000 residential sales, for a ratio of 1-to-3."

That is air conditioning's role in the increasingly vigorous "battle of the fuels," the active competition between electric and gas utilities for more load on their lines, in the opinion of G. J. Tankersley, president of Western Kentucky Gas Co.

As recently as early 1959, skeptics, in the gas industry as well as out of it, were ridiculing such optimistic predictions for gas air conditioning growth. Now, they aren't so sure.

Fighting an uphill battle against well established competition, gas air conditioner manufacturers are introducing new lines and expanding sales at a rate which, if continued, will soon make them major factors in an industry where they now capture only 4 to 6% of the market.

Since late 1957, over 27,000 residential size central units have been sold.

Manufacturers have been helped by utilities, by high acceptance and low service requirements of their units, and by low operating costs; they have been hindered by a short line of products, by high first costs, by the image cast by mass failure in a major field test, and by public indifference.

* * *

When gas interests came to realize the importance of air conditioning to their well being, first thought was that gas engine-driven compression systems would provide the quickest and best entry into the field.

In what has been described to the NEWS as "the most poorly conducted field test in history,"

(Continued on Page 29, Col. 3)

Another TOTAL LOOK

Once again the NEWS offers a complete discussion of an important industry topic—this time, Gas Air Conditioning.

Using the same comprehensive approach which resulted in the widely hailed Heat Pump Issue (Sept. 21, 1959), NEWS editors have prepared a many-faceted study of gas cooling which will make this issue a valuable reference source for anyone interested in or concerned with the growth of this newcomer to the industry.

As indicated in the lead story starting on this page, these pages contain specific information on markets and sales, on installation and service experience, on research and development, on customer reaction.

LAST MINUTE SALES FIGURES for the three major manufacturers are found in the stories beginning on pages 12, 14, 24

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C. E. C. Providing Guides to Better Practices

GEARHART, Ore.—Distribution of a "Manual of Consulting Engineering Practice" and moves designed to strike back at government encroachment on private engineering practices, and at efforts to weaken professional engineering requirements, marked the annual meeting of the Consulting Engineers Council board of directors here.

The C.E.C. Manual of Practice for Consulting Engineers is an effort to assemble, in one volume, the general mechanics and recommended principles of performance that should be used as a guide in the conduct of a successful consulting engineering practice. The manual is designed not only for practicing consultants, but for engineering students, manufacturers, and clients.

Prepared by a special Task Force Committee under the chairmanship of Thomas R. Miles, Portland, Ore., the manual includes sections for the guidance of consulting engineers in relationships with clients, as well as a section on the evaluation of potential clients. Transmission of engineering information through drawings and specifications is

(Continued on Back Page, Col. 1)

Hy Jarvis To Head 12th Exposition

WASHINGTON, D. C.—H. T. "Hy" Jarvis, president of Recold Corp., has been named chairman of the 12th Exposition Committee of the Air-Conditioning & Refrigeration Institute, it was announced by the board of directors of ARI.

The Exposition will be held Feb. 12-15, 1962, at the Great Western Exhibit Center in Los Angeles, the first time that an ARI show has been staged on the West Coast.

(Continued on Page 29, Col. 2)

ASHRAE Program Set for Meeting In Vancouver

VANCOUVER, B. C., Can.—A technical program emphasizing absorption type air conditioning, refrigerants, thermoelectric engineering, and heating—among other things—has been arranged for the 67th annual meeting of the American Society of Heating, Refrigerating & Air-Conditioning Engineers.

The meeting will be held June 13-15 at the Hotel Vancouver here.

The program includes four technical sessions, two symposiums (domestic refrigerator engineering and commercial refrigeration), and seven forums.

Topics of the symposiums are, respectively, "Human Engineer-

(Continued on Page 29, Col. 1)

Time Again for

Plant Vacation Schedules

DETROIT—Vacation time is here again.

As in past years, the NEWS will publish—beginning in the next issue—a listing of scheduled plant shutdowns for vacation or inventory purposes.

The listings have proved valuable to readers who are planning to buy from or sell to these plants this summer.

Listings, printed usually three or four weeks ahead of the scheduled shutdown, give the closing and opening dates for plant and/or office and indicate whether shipments, if made during the shutdown period, are on a regular, emergency, or from stock basis.

Any manufacturer who has not yet received a questionnaire asking for this information is invited to submit it to the NEWS now.

Early vacations are being taken by the following firms:

Paul Mueller Co. of Springfield, Mo. has shutdown both plant and office from **May 27 to June 5. Stock items only** are being shipped.

Armstrong Furnace Co., Div. of National Union Electric Corp., Columbus, Ohio, will close its plant from **June 13 through July 4.** Shipments will be on an **emergency** basis.

Admiral Corp.'s Midwest Mfg. Corp. subsidiary at Galesburg, Ill. will close for vacation and inventory from **June 17 to July 12. No shipments** will be made during that period.

I-B-R Gathers at Seaview Country Club June 7-9 for Annual Meeting

ABSECON, N. J.—The 45th annual meeting of the Institute of Boiler & Radiator Manufacturers will be held June 7-9 at the Seaview Country Club here.

The meeting will get under way at 2 p.m., Tuesday, June 7, with an hour-long closed business session for members, international members, and associate members. All other sessions will be open to guests and the trade press as well as the membership.

Following the business meeting there will be a session devoted to election of officers and Executive Committee for the next fiscal year and to I-B-R Laboratory research on finned tube testing.

The Wednesday morning session will be on present and future programs of the I-B-R. Rather than have the members of the staff make reports, this part of the program will be an audience-participation session, it was pointed out by I-B-R General Manager R. E. Ferry. He said the membership and trade press representatives will be invited to direct questions to members of the Institute staff on any phase of I-B-R activities.

M. C. Reed, Institute chairman, will serve as the moderator for this session. The answering panel will include Ferry; Hilda Eisenhardt, assistant general manager; Arthur L. Wales, field training director; John I. Woodworth, administrative assistant; Glenn R. Sward, chief engineer, I-B-R Laboratory; and M. C. Steen, counsel, according to the announcement.

The session on Wednesday afternoon will include a presentation on "The Voice of Personal Experience" by Harold C. Day and a panel discussion on "The Hydronics Industry and the I-B-R." Panel members will be Reed; Joseph J. Decker, president of the American-Standard Plumbing & Heating Div.; and Wesley A. Songer, president of Crane Co.

A press conference is scheduled to follow this session.

Four main topics are on the agenda for Thursday morning, June 9. They are: I-B-R research; the Better Heating-Cooling Council, R. S. Doherty, president; marketing research, publicity, and promotion (a. Task Force No. 2, Better Trade Salesmen. b. Task Force No. 5, Facts re Heating Systems); status of testing and rating code for fan coil units, L. N. Hunter, chairman, Co-ordinating Committee.

A golf tournament will get under way following adjournment at noon.

no place in the U. S. A. is too hot for the KRAMER

UNICON-COMPRESSOR

(and no place is too cold, either)

Yes . . . it is true! Kramer's UNICON-COMPRESSOR (packaged air-cooled condensing unit) can operate any place in the United States the year 'round. With the patented Kramer Winterstat, it operates without adjustments in the dead of winter—when cooling and dehumidification are necessities. Combined with the matching Kramer Air Conditioning Unit, a complete system can be yours from one source.

Light and compact, Kramer's UNICON-COMPRESSOR arrives on the job completely assembled, wired, tested and factory run-in . . . ready to operate.

There's a Kramer system for any size job, too! Available in 3 to 70 tons, multiple use provides unlimited tonnage application. And you can specify a vertical or waist-high horizontal face UNICON-COMPRESSOR.

WRITE FOR BULLETIN

KRAMER TRENTON CO., Trenton 5, N. J.

47 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

223 Sign Up for ARW Cruise Convention

CLEVELAND — The first month's promotion of the Air Conditioning & Refrigeration Wholesalers' 25th anniversary convention—to be held aboard the *S. S. Hanseatic,* 30,000-ton flagship of the Hamburg-Atlantic lines—has resulted in 223 reservations, the association announced recently.

Said ARW Executive Director Thom Muir:

"We are more than pleased with the results to date. We estimated 300 people would attend. Our only promotion to date has been the glamour side of the convention. We have not announced the business meeting agenda. In June, when we do announce the agenda, we believe it will stimulate even greater interest among members and manufacturers."

"As of this date [May 18], 82 wholesale firms will be represented. In number of firms this is 20% ahead of any former convention, where there was not an exhibition during the same time."

The *S. S. Hanseatic* is scheduled to sail from Port Everglades, Fla. on Friday, Oct. 28, with port of call in Jamaica and Haiti. Members and guests will return Wednesday morning, Nov. 2.

Strike Over, Foster In Full Production

HUDSON, N. Y.—Foster Refrigerator Corp. is back in full production following ending on May 20 of a strike by Local 317 of the International Union of Electrical Workers, according to a company official.

The strike began May 9 when 80 members of Local 317 left their jobs and formed picket lines. The dispute reportedly involved wage, cost of living, pension, and paid-holiday provisions of a new contract.

McQuay Reports First Quarter Sales Up 48%

MINNEAPOLIS — Sales and net profits of McQuay, Inc. for the first quarter of 1960 again set new records, according to a report sent to stockholders by B. E. James, president.

Net sales for the first three months of 1960 were $5,412,853, an increase of 48% over the $3,670,267 reported for the same period in 1959. In the last quarter of 1959, net sales amounted to $3,909,594.

Net profit in the first three months of this year was $158,450. This amounted to 40 cents a share on 386,836 outstanding shares of common stock. For the same period in 1959, net profits were $120,446, equal to 38 cents a share on the 311,745 shares of common stock outstanding at that time.

"Orders booked and sales completed during the first quarter of this year were the highest for this period in the history of the company," James said. "The backlog of orders at the end of the first quarter is substantially higher for this date than for any previous year."

UsAirco Appoints Culbertson To Head Coil Div.

DELAWARE, Ohio — United States Air Conditioning Corp. has announced the appointment of Reaver Culbertson as manager of the Coil Products Div.

Included in this division are all coils, air handling equipment, and fan coil units.

Culbertson has been associated with the air conditioning and heating industry since his discharge from the service in 1946. He was formerly a field agent for UsAirco from 1951 to 1957 and spent 1½ years as an air conditioning specialist with National-U. S. Radiator Corp.

Irving B. Hexter, Publisher, Dies

CLEVELAND — Irving B. Hexter, president of Industrial Publishing Corp. here, which publishes *Refrigeration & Air Conditioning Business,* died May 22 here. He was 62.

His death followed a second heart attack. Hexter had been active in the work of the American Heart Association, having received the association's Gold Medal Award in 1957 and having founded the Hexter Laboratory for cardio-vascular research at Mt. Sinai hospital here.

Hexter founded the Industrial Publishing Corp. in 1930. The firm publishes magazines in a variety of industrial fields, and published in the air conditioning and refrigeration field following the close of World War II.

Surviving are his widow, Eva, and two daughters, Mrs. Alan J. Kichler and Mrs. Robert I. Broida.

Barber-Colman To Expand Plant Facilities

ROCKFORD, Ill. — Barber-Colman Co. announced that it will expand plant facilities to meet increasing demands for its automatic controls, air distribution products, overhead doors, and industrial instruments.

The addition to the Park Plant, situated on 50 acres at the northern edge of Rockford, will increase the present plant area by approximately 170,000 sq. ft.

General architect for the project is Hubbard & Hyland of Rockford. E. R. Gritschke & Associates of Chicago will design mechanical and electrical installations, including air conditioning, heating, ventilating, plumbing, lighting, and wiring.

Firms In France, India, Nigeria Seek Agencies for Cooling, Refrigeration

WASHINGTON, D. C.—Companies in France, India, and Nigeria are seeking agencies for U. S. air conditioning, refrigeration, according to the Business & Services Administration, U. S. Dept. of Commerce.

Establissements A. Moreau, 9 Cours Bosquest, Chemin du Loup, Pau, Brasse-Pyrenees, France, is interested in purchasing and seeking an agency for air conditioning equipment (individual units and generators); prefabricated plumbing equipment, fixtures, and supplies; and central heating equipment.

This company is a wholesaler-retailer selling agent handling household electrical equipment, refrigerators, air conditioning and central heating equipment, and related lines. It does not do installation work. The firm corresponds in French and Spanish.

Refrigerators, refrigeration equipment and evaporative air coolers are wanted for direct purchase and agency is being sought for its area by Al Haj Abdul Sahib Al Haj Murtada al Bazzaz, Suq al Mukhiyam, Kerbala, India. The company is an importer and wholesaler of textiles, machinery, radio sets, and household appliances.

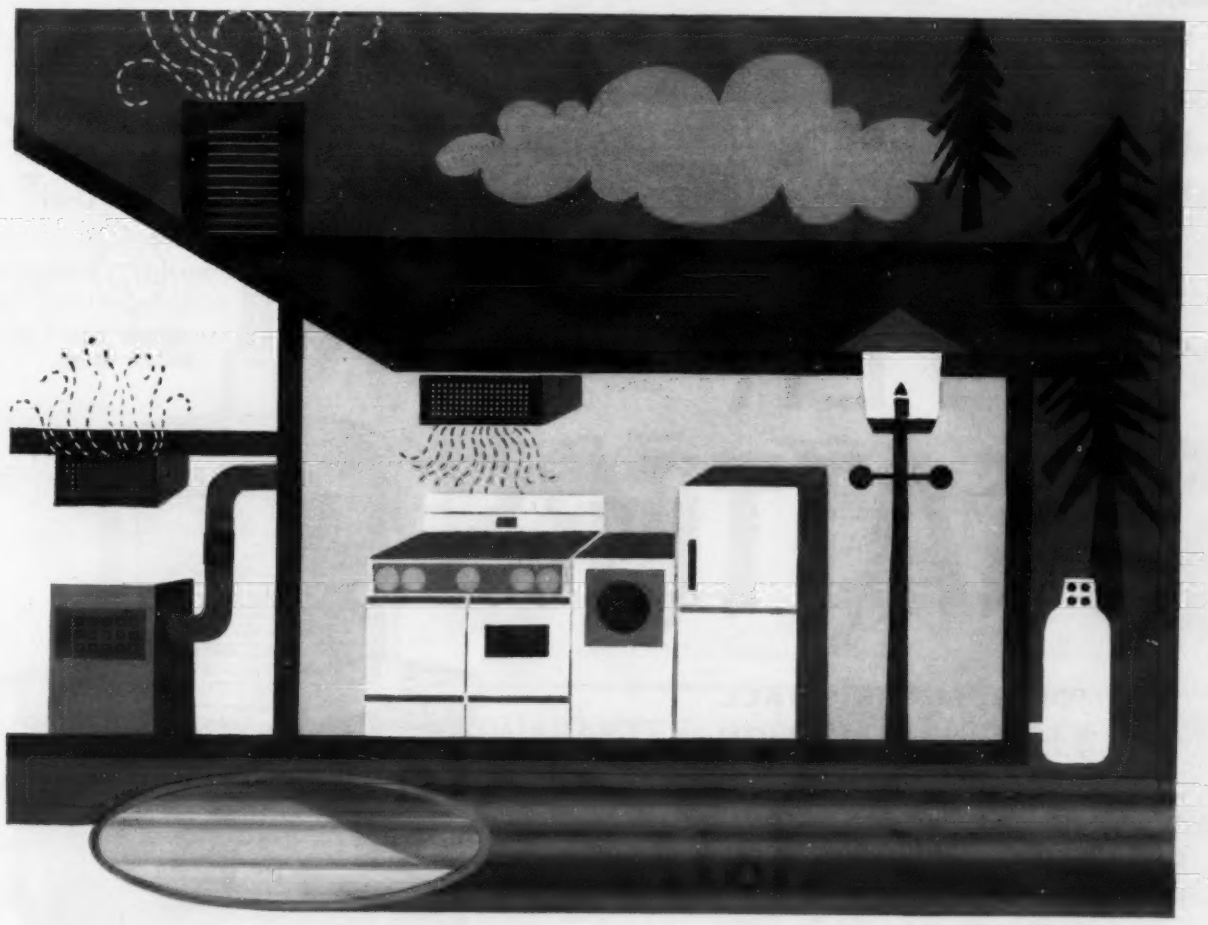
An agency is sought for ice cube making machinery and air conditioning equipment by M. Bank Anthony, O.B.E. Esquire, importer, wholesaler, and retailer, Executive House, 2A Oil Mill St., P. O. Box 75, Lagos, Nigeria.

Right Truck plus Wrong Driver equals Stay In Jail

ALHAMBRA, Calif.—Arthur D. Smith, vice president of Commercial Refrigerator Co., Los Angeles, while driving on Huntington Dr. here recently, passed one of his company's trucks.

But he didn't recognize the truck driver. Figuring something was amiss, he chased the truck and forced it off the road, Smith told police.

When arrested, 21-year-old Jimmy Eugene Smith reportedly admitted to police that he stole the truck in Los Angeles and was on his way to Tennessee. Jimmy Smith was booked in the local jail on suspicion of grand theft auto and held for Los Angeles police.



Ideal for all kinds of gas-fired appliances and equipment . . .

NEW PHELPS DODGE TIN-LINED COPPER TUBE*

Protects Against Corrosion!
Eliminates Maintenance and Replacement!
Easily Installed!

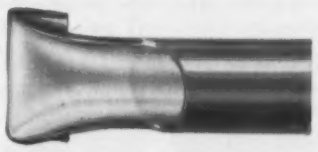
Phelps Dodge has combined the outstanding corrosion resistance of tin with the strength and ductility of copper in a new tube that is immune to troublesome sulphur conditions found in some natural gas and petroleum products. It eliminates maintenance and replacement problems, yet installed costs compare favorably with competitive materials in lines to heaters, ranges, furnaces, air conditioners, LP gas tanks and outdoor gas lamps.

The continuous, inseparably-bonded tin lining positively resists flaking action that can plug lines and orifices. The tube can be bent, flared or soldered, providing "easy-to-use" features that reduce labor costs, speed up installations.

Tin-lined tube can be pulled through old steel or iron pipe without protective wrapping. Available in long continuous lengths and in sizes from ⅛" O. D. to ⅝" O. D. Sample and descriptive data on request.

Phelps Dodge tin-lined copper tube also has advantages for: gas utilities installations; oil lines; laboratory and test equipment; plumbing and water-distilling apparatus; food, beverage and pharmaceutical equipment.

Fusion-bonded tin lining will not crack, peel or flake when bent or flared.



*Patent pending

PHELPS DODGE COPPER PRODUCTS Corporation • 300 Park Avenue, New York 22, N. Y.

FIRST FOR LASTING QUALITY—FROM MINE TO MARKET!

PD

National RSES Week Being Observed Across the Nation June 1 to 7

CHICAGO—Governors of 30 states have issued, or are expected to issue, proclamations designating the period June 1-7 as National Refrigeration Service Engineers Society Week.

Following the practice of the last two years, many RSES chapters have made preparations to observe the week. J. Lawrence Hall, Nashua, N. H., International sergeant-at-arms, is chairman of the activity this year.

The week's observance is intended to focus attention on the men "who keep 'em running"—refrigeration personnel engaged in the installation, servicing, and maintenance of refrigeration and air conditioning equipment, according to the RSES announcement.

However, the society noted that the end result of the program is intended to publicize the refrigeration and air conditioning industry in its entirety. So local, state, and regional RSES groups were urged to enlist the cooperation of other industry groups — wholesalers, manufacturers, distributors, dealers, etc. — in the observance.

Typical State Proclamation

Typical of the state proclamations is that by Gov. William G. Stratton for the State of Illinois:

"Whereas, The International Association of the Refrigeration Service Engineers Society, its chapters and members throughout the United States and Canada, has designated June 1-7, 1960, as Refrigeration Service Engineers Society Week, and

"Whereas, Mechanical refrigeration contributes to the human welfare and comfort by the science of air conditioning and is the most important segment of food preservation and health assurance, and

"Whereas, Mechanical refrigeration is one of the greatest single promotions to environmental effects upon meteorological research and its contribution to our missile age, and

"Whereas, the Refrigeration Service Engineers Society, with many chapters in Illinois, is performing an essential service in the maintaining of refrigeration equipment,

"Now, Therefore, I, William G. Stratton, Governor of the State of Illinois, do hereby proclaim June 1-7, of the present year, as Refrigeration Service Engineers Society Week in Illinois and urge all citizens to acknowledge the great contribution the members of the Society have made to our national health, wealth and welfare through their untiring efforts."

New Orleans Contractor 'Vacation'--

(Continued from Page 1, Col. 2)

available contractors — if they can."

Asserting that many of the councilmen "seem confused about who is, and who is not, in the trade," Thompson said the walk-out would serve to clarify this matter.

He stressed that service would continue to be available to places concerned with health, such as hospitals and doctor's offices. He also noted that the "vacation" plan would be canceled if the council adopted the licensing ordinance.

The licensing proposal was presented to the city council last fall. As reported earlier in the NEWS, wide differences of opinion on the measure were expressed at a public hearing late last year. The council took the proposal under advisement las February.

Under the proposed ordinance, any person, firm, or corporation could be granted a license without examination if it were established that they had been active in the trade for four years and if they complied with other provisions. All others would have to pass an examination.

Those backing the proposed ordinance claim it is necessary in order to make sure that persons engaging in the air conditioning and refrigeration business are qualified to do so.

Thompson is president of the Master Refrigeration & Air Conditioning Association, composed of contractors in the Greater New Orleans area, and also heads the Louisiana Refrigeration & Air Conditioning Contractors Association.

He said these groups and also the Air Conditioning & Refrigeration Trades Association of Louisiana are supporting the "vacation" plan. Contractors in these associations account for 80% of the New Orleans trade, he claims. Making up another 10% committed to participate in the plan, he said, are several retail sales firms employing independent contractors.

Thompson said early last week that a mass meeting of all in the trade had been scheduled for Thursday, May 26, to discuss the "vacation" plan and seek the support of those who don't belong to the associations involved. He said invitations to the meeting had been sent to all in the trade, including contractors, supply houses, mechanics, and appliance dealers.

Also scheduled for discussion, according to Thompson, was legislation he said was being introduced in the state legislature providing for a state licensing law.

Thompson indicated this move was being made so that if the contractors lost their battle for a city licensing ordinance they would have "another shot at it" on the state level.

He also indicated that the licensing controversy involves a jurisdictional dispute with plumbing and electrical people.

York President--

(Continued from Page 1, Col. 1)

durable goods industry without a high degree of saturation."

R. S. Ingersoll, Borg-Warner president, in announcing the change said:

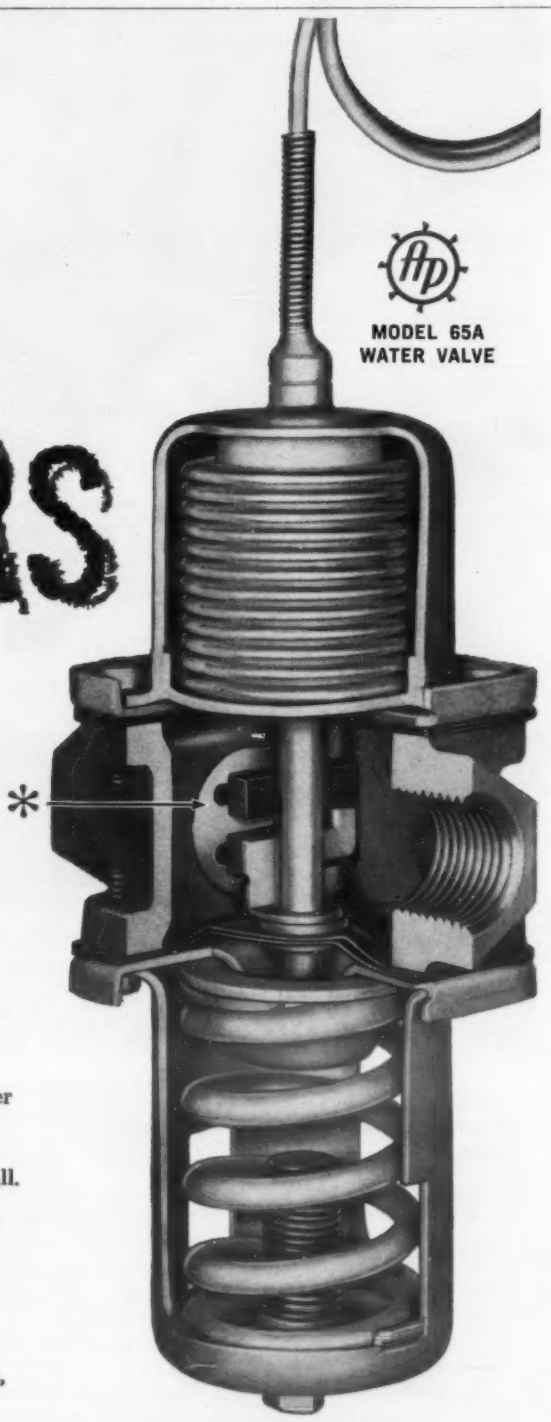
"With the appointment of Joe Elliot, Borg-Warner numbers on its team two of the country's outstanding producers and merchandisers of consumer durable goods, with Judson Sayre as chairman of the Norge Div. and Joe Elliot as president of the York Div."

Elliot began his career in the consumer durable goods field with RCA in 1935 and worked up in the company to become executive vice president.

York Div. is celebrating its 75th anniversary this year. In the past two years it has undergone a number of changes in its structure and management setup. The Borg-Warner report for 1959 credited the York Div. for a major contribution to its record-breaking sales volume.

NEW CONDENSER WATER REGULATING VALVE

NEVER CHATTERS



A-P MODEL 65A IS SMALL FOR EASY INSTALLATION . . .

*FEATURES SELF-CLEANING ORIFICE FOR RELIABLE OPERATION EVEN IN DIRTY WATER

The A-P model 65A eliminates chatter because it is not affected by inlet pressure variations . . . a unique design feature of the 65A valve in regulating water flow to condensing unit by head or condenser pressure.

The model 65A cleans itself as it operates. A Graphitar sliding block — the only moving part in water — wipes over the orifice in the stainless steel facing plate. Provides trouble-free service even in dirty water.

Compact size makes the A-P 65A quick and easy to install. Adjusting stem is completely accessible for easy manual adjustment — 65 to 300 psi. All moving valve parts operate as one unit. Gives quiet operation, increased bellows life. Low-friction Graphitar block won't wear out. Nylon-reinforced rubber diaphragm gives positive seal — provides flexibility for closing-opening action. Available in sizes ⅜", ½", ¾" female N.P.T.

Next time you install a condenser water regulating valve, install the industry's newest, quietest, pressure-actuated valve . . . the A-P model 65A.

Creative controls for industry

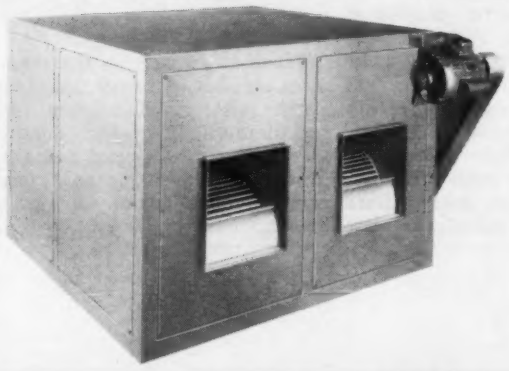
CONTROLS COMPANY OF AMERICA

HEATING AND AIR CONDITIONING DIVISION

2460 N. 32nd St., Milwaukee 10, Wisconsin • Cooksville, Ontario • Zug, Switzerland

HAVE YOU NOTICED HOW COMPLETE OUR PRODUCT LINE IS?

AIR HANDLERS · 880 to 47,500 CFM

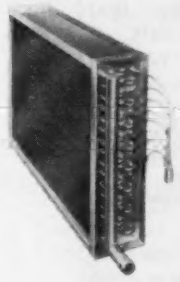


Suspended or floor mounted types. Space within cabinet for up to 12 rows of coil depth. Coil face areas from 2 to 68 square feet. Write for Bulletin AHU-100.

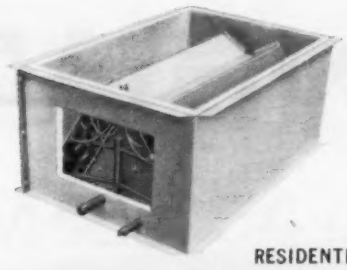
FINNED COILS with Turbu-Flo Fins

All types. Available with 6, 7, 8 or 10 fins per inch, aluminum or copper, on seamless copper tubing. Finned heights of 12 to 36 inches; finned lengths up to 10 feet; coil depth, 1 to 8 rows. Write for literature.

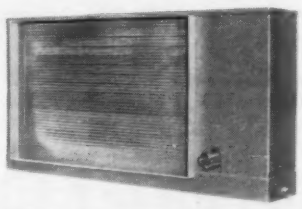
WATER COILS
(Chilled or Hot)



DIRECT EXPANSION COILS



RESIDENTIAL AIR CONDITIONING COILS

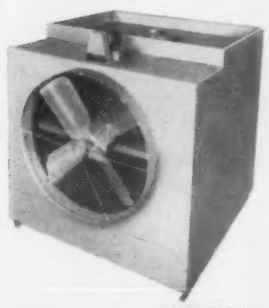


NON-FREEZE STEAM COILS

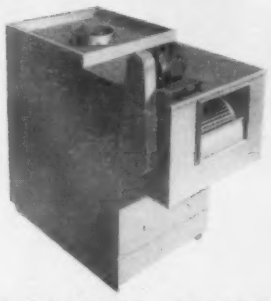
STANDARD STEAM COILS

COOLING TOWERS with an exclusive 20-YEAR GUARANTEE

Only H & M cooling towers with pressure-creosoted wood fill offer a 20-Year Guarantee on the wetted deck surface against failure due to rotting or attack by fungus. Standard or Take-Apart models. Write for literature.



PROPELLER FAN MODELS 5 to 150-TONS

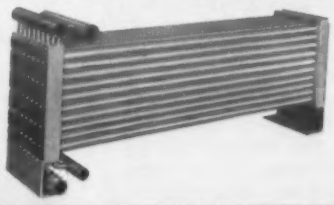


CENTRIFUGAL FAN MODELS 5 to 30-TONS

WATER-COOLED CONDENSERS

Cleanable mechanically, safely

Double-tube design, seamless copper tubing for true counterflow and greater sub-cooling. Removable headers. ⅓ to 25-tons. Write for literature.



Ask your wholesaler for more information or write Halstead & Mitchell Co., Bessemer Building, Pittsburgh 22, Pa.

HM Halstead & Mitchell

AIR-COOLED CONDENSERS with wide-spaced finned coils

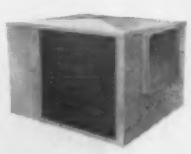
Turbu-Flo fins are spaced wide to minimize clogging by airborne dust and dirt. Wide selection of types and sizes. Write for Bulletin AC-102.

PROPELLER FAN MODELS

Horizontal Air Flow
3 to 100-tons

Vertical Air Flow
5 to 100-tons

CENTRIFUGAL FAN MODELS



Residential Type
2 to 7½-tons

Commercial Type
10 to 30-tons

Merchandising Gas Air Conditioning

Distribution Patterns, Pricing, Installation, Service Vary Widely Because of Newness of Residential Gas Market

Merchandising activity of those promoting gas air conditioning can only be described as dynamic and aggressive. Depending on viewpoint, that description may be flattering or not, for there are some who hold that gas air conditioning promotion in specific instances borders on being ungentlemanly. Nevertheless, the gas industry is fighting an uphill battle at the moment. It is faced with several disadvantages which dampen the enthusiasm of less determined people.

1. Gas air conditioning is generally more costly to install than its competition.

2. There are not, as yet, units to blanket the "middle jobs"—those calling for 7½, 10, 15 tons. The only way gas can get many of these jobs is to sell two 5's or three 5's, further increasing the first cost disadvantage.

3. There are many people who do not as yet know that gas air conditioning exists.

That gas air conditioners are increasing sales in the face of such factors is due partly to the performance of the units and partly to the aggressive merchandising activities which are discussed in this article.

●

Gas air conditioning distribution and pricing policies are "in process of formation" or "confused" depending on who is speaking. Other articles in this issue point out that prices to customers vary widely and that distribution may be through utilities, distributors, agents, dealers.

Because of the newness of residential gas air conditioning, installation and service assume more significance in pricing and distribution than they assume in longer-established commodity merchandising. As a result, there will be some places where gas air conditioners will cost customers more a few years from now in spite of reduced production costs and more standardized distribution.

Service will cost surprisingly more in areas where it is now being offered free or at nominal cost. Customers whose friends have no knowledge that it costs anything at all to install their unit will meet with installation charges and delivery costs.

In effect, gas air conditioning will mature until it is being merchandised very much like its competition.

Utility Attitude Big Factor In Cost

"We are all at the doorstep of the utilities," admits one sales manager, pinpointing the central factor in the "confused" merchandising picture. Utility attitude towards gas air conditioning determines in a very practical way what it will cost a customer to purchase and operate a residential and small commercial absorption unit.

UNIT PRICE: How much does the unit, itself, cost? This depends on whether the utility merchandises or not, for one thing. When it does, it may have a a pricing schedule which offers the unit to a dealer at 5% over cost, to a homeowner at 15% above cost. Another company offers units to dealers and distributors at a 5% markup, to the owner at 10%. Still another offers the units at cost to everybody. A Michigan utility buys units in carload lots and drop ships them for dealers at cost-plus-freight.

INSTALLATION: As the article on costs shows, in another place in this issue, installation charges apparently vary considerably. While labor costs and such factors have a bearing on these charges, many times the variation in installation cost is more apparent than real and rather reflects how much of the cost the utility is willing to absorb. Some, for example, will pay for the plumbing of a Bryant unit or the ductwork in an Arkla installation. Some will pay for the cost of delivering and locating the unit—factors which can add up in cities where union control is such that the normal contractor may not freely handle them.

Whether a utility merchandises or not, it may take an active part in engineering the installation. "The gas company in one of our territories gets the prospect, makes the heat loss calculations, fills out the order blank, then hands it to the

IN FLORIDA, where natural gas is comparatively new, the Gas Institute of Greater Miami is telling the gas story via displays like this.

dealer to hand to the customer for his signature," states one manufacturer's spokesman. In another area, the NEWS found, when the utility actually gets and writes up the order, the dealer who acts as the installing contractor gets no markup on the sales price, but collects only his contracting fee.

SERVICE COST: As indicated in the article on service, absorption units seem to have high reliability primarily because of the great reduction in the number of moving parts compared to either gas or electrically driven compression air conditioners.

Thus, some utilities offer free service for one or two years, then very inexpensive service after that on either a contractural or a time-and-materials basis. "After all," one utility told the NEWS, "we aren't making any money when these things are inoperative. It is just good business to offer free or low-cost service."

Utilities Reducing Summer Rates

To get rid of their "summer valley"—low load factor in hot months—more utilities are reducing rates to attract air conditioning prospects.

Such factors as those just discussed have so far made it difficult for the individual owner to know the real cost of the unit and how much it costs to maintain.

The NEWS has found owners who had no idea but that the price they paid for service is "normal."

While it is unlikely that utilities which have changed their rates for summer cooling will raise them again, the use of operating costs based on these rates in general merchandising has been found misleading in some cases where the summer rate for gas is considerably higher.

As an industry, the gas people are using the usual media—newspapers, television, radio—to reach the consumers and business papers to reach the industry with their story. In spite of a great amount of money and well directed activity, however, the fact is that there are millions of people who do not know that gas air conditioners for the home are available. "There's been quite a bit of talking to ourselves," more than one source admitted.

'Every-Employe-a-Salesman' Campaign Successful

One of the most effective approaches to getting the word to the public has been the "every-employe-a-salesman" campaign used by several utilities. Arkansas Louisiana Gas Co., for example, offers an employe $10 if the lead he gives the company results in a sale. "Scores of domestic and commercial air conditioning installations are the results of a prospect name turned in by an employe outside the sales department," states the company which has seen gas air conditioner sales go from 85 in 1956 to 1,730 in 1959.

"EVERY EMPLOYE A SALESMAN" is the underlying theme of many utility gas air conditioning programs. Here Wallace Mantooth, superintendent of Chattanooga Gas Co.'s operations department, buttonholes a prospect, a Chattanooga auto dealer, later received a $10 bonus when company sales department closed the sale.

On larger tonnage equipment, utilities normally work closely with the distributors and contractors involved.

Most people associated with the selling of gas air conditioning agree that the present methods of getting the product from the manufacturer to the owner are not the best. Several utilities are looking forward to the day, for example, when they do not have to handle service on air conditioners. A few would rather not have the manufacturers depending so much on them for sales. Not all are convinced that a reduced summer rate for gas is wise.

On the other hand, some dissatisfaction with "utility control" has been voiced to the NEWS by field people, especially.

The hope is expressed that as gas air conditioning continues its rapid growth, conventional distribution and pricing policies can be implemented. Whether this will take two or ten years, no one is quite willing to predict.

Warranties on Gas Air Conditioning

The five-year warranty seems to be holding its own in gas air conditioning—at least with absorption units.

Arkla and Bryant are offering similar warranties covering the refrigerant cycle for five years and vendor-supplied items, such as motors and controls, for the warranty granted by the vendor—usually one year. Bryant defines the refrigeration cycle as "that part of the system which actually 'sees' the refrigerant," that portion of the unit which is in contact with the refrigerant solutions.

Partly because of the current industry trend away from labor allowances and partly because such allowances would confuse relationships between owners and the various utilities who service the units, the two companies omit labor allowance from their warranties.

Manufacturers of gas engine-driven equipment apparently are going for a one-year warranty, with some offering extended coverage at a price.

FROM BRYANT

Model 54-450 GAS air conditioner

The only 52,000 BTUH, ADD-ON gas unit... designed to reach a broad, new untapped market — larger homes and small commercials — where you can get your price without bucking low dollar competition. It's AIR-COOLED... no water tower. No rotating parts. It's REMOTE... condenser goes outside, roof, ground, anywhere up to 75 feet away. Simple, low-cost installation — fits any gas furnace; no special wiring needed. Distributor-factory backup on selling, engineering, layout, supervision. Only Bryant can give you both gas and electric air conditioning.

12 REASONS WHY YOU'RE AHEAD WITH BRYANT:

1. Most complete line. 2. Exclusive features you can sell. 3. Fast delivery. 4. Most flexible financing and credit assistance. 5. On-the-spot counsel. 6. Sales and technical training. 7. Business management guidance. 8. Local ad campaigns. 9. Sound selling policies. 10. Bryant's national reputation. 11. Gas air conditioning. 12. Bryant's financial strength.

bryant

Bryant Manufacturing Company, Indianapolis, Indiana
In Canada: Bryant Manufacturing Ltd., Toronto, Ontario

MORT CLARK'S **GALV-WELD** ALLOY ORIGINAL & GENUINE

Solves corrosion problems in outdoor cooling towers, ductwork, etc. Dominate your market by selling trouble-free, all-galvanized structures with Galv-Welded joints. Write for details. Free sample.

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P.O. Box 1303
Bradenton, Florida

Inside Dope

By GEORGE F. TAUBENECK

(Continued from Page 1)

While Mother Chops the Wood."

"Boola Boola, Boola Boola."

"Don't Put Your Foot In My Face, Dear."

"My Sweet Tooth Says I Wanna, But My Wisdom Tooth Says No."

These are actual song-titles of the Gaslight Era. Is this what you want us to return to, Chet?

Gives These Back to The Gaslighters

"When Amy Thistle Plays Her Sweet Potato Whistle, When Are You Going to Lead Me to the Altar Walter, When Can I Have a Banana Again, When Ezra Played His Tweedle Dee Twee, and When the Gooses Come Back to Massachusetts."

No kidding! Your mother or grandmother played them on her piano.

"When I Ride with Mike on a Two Seated Bike, When I See All the Loving They Waste on Babies I Long for the Cradle Again, When It's Night Time In Italy It's Wednesday Over Here, When It's Tooth Pickin' Time In False Teeth Valley, When Rosie Riccoola Do the Hoola Ma Boola She's a Hit In Little Italy."

(Rally 'round the Flag, Boys, Father Just Blew His Toupee.)

Among the girlie songs daddy used to sing were: Girl at the Ironing Board, Girl Behind the Venetian Blind, Girl I Left Before I Left the Girl I Left Behind, Girl In the Police Gazette, and Girls Girls Girls Girls Girls.

"Grandfather's Wooden Leg" was contemporary with "Grandma's Flannelette Nite Shirt." "I Bought My Pants In Pantsylvania" was as rife among state songs as "Hello Wisconsin Won't You Find My Yonnie Yonson," or " 'Twas a Bright Moonlight Night In Missouri."

"It Happened In" songs include Chicago, Hawaii, Holland, Honolulu, Kaloha, Monterey, Nordland, Paris, Sun Valley—plus, "One Night In a Blackout," all of which are capped by "I Wish I Was In Peoria on a Rainy Night."

In a travel agent's office we find "All Aboard for Blanket Bay, Dixieland, Dreamland, Heaven, Paris, Santa Claus, Sleepy Hollow, and Smorgasbord."

Billy Rose discovered that "Adam Never Had a Mammy"; another songwriter (not Debussy) recorded the "Afternoon of a Billy Goat," and a third described, dolefully, "Another Notch In Father's Shotgun."

Topping them all, for the sociological investigators, may be this song-title of the 1920's:

"How Can I Explain My Wife To You When She Doesn't Understand Me?"

John Philip Sousa, anyone?

Out of Our Mailbag

General Electric Co.
Tyler, Texas

Editor:

Do you read the headline on the attached clipping the same way I do?

"Three Bodies Will Unite In New Lutheran Church."

Saw one the other day which said, to wit:

BAPTISTS TO GIVE TANKS SUNDAY.

How's tricks generally?

WALTER R. YEARY,
Manager, Projects Engineering

Stories of the Week

Chief of a newly independent nation in the interior of Africa had acquired political savvy.

"First," he explained to his assembled constituents, "we'll accept Communist China's offer of a tractor and 200 technicians.

"Then Russia will send us 10 tractors and 100 technicians. After that we can blackmail America for 100 tractors and 10 technicians.

"We'll be in clover. We can eat the technicians and sell the tractors."

Two salesmen met in a bar after a long interval during which their paths hadn't crossed.

"Jim," genialled Joe, "you still talk as slowly as you did when I first met you."

"If-you-think-I-talk-slow-you-should-hear-my-secretary," slow-balled Jim. "She-had-a-date-the-other-night-and-her-boy-friend-parked-on-the-way-home. Before-she-could-say, 'I'm-not-that-kind-of-a-girl,'—she-was."

In the courtroom of Judge Tom Pasierzny, Wayne County (Mich.) prosecutor David Flager was tying a witness in double bow knots.

Up jumped a defense attorney to protest:

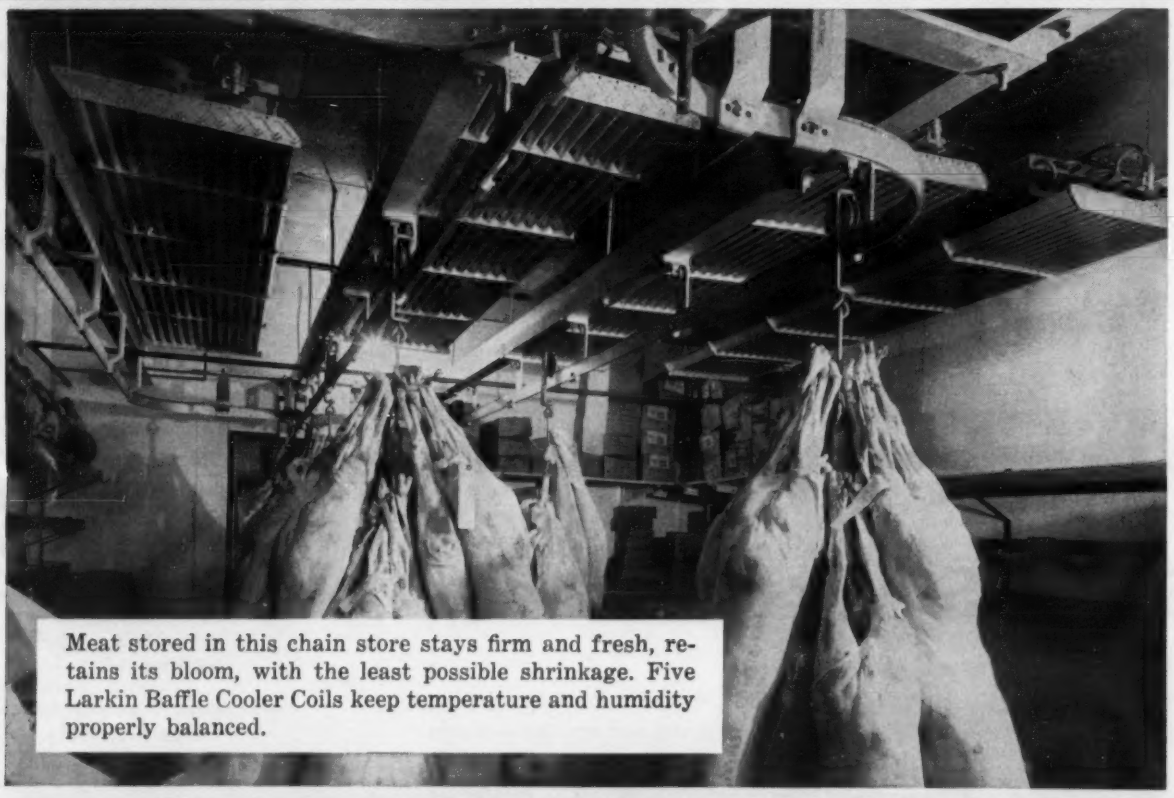
"Judge! He's calling my liar a witness!"

Quotes of the Week

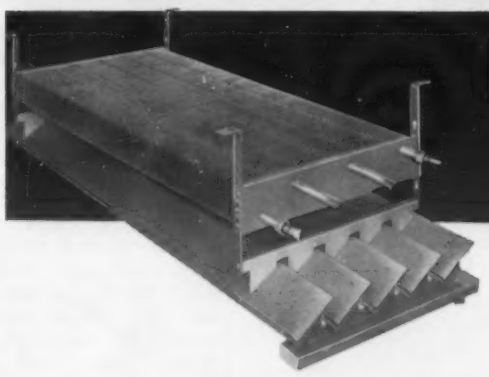
Next year I am going to live within my income—even if I have to borrow the money to do it.—MARK TWAIN.

It wasn't until quite late in life that I discovered how easy it is to say, "I don't know."—SOMERSET MAUGHAM.

Tomorrow will be the most wonderful day in history. That's the day when we all are going to begin doing better.—*Sales Management.*



Meat stored in this chain store stays firm and fresh, retains its bloom, with the least possible shrinkage. Five Larkin Baffle Cooler Coils keep temperature and humidity properly balanced.



LARKIN baffle cooler coils keep meat in top condition

Smart retailers look to the refrigeration contractor-dealers for systems that keep meat in the best possible condition—firm with good bloom, minimum shrinkage. Such meat sells better without wasteful trimming, hence yields more profit.

Let us show you the astonishing graphic results we have obtained under actual applications with Larkin Baffle Cooler Coils.

OUTSTANDING FEATURES

- Patented Larkin cross-fin coil with aluminum fins and staggered, electro tin-plated, copper tubes, mechanically expanded.
- Baffles are constructed of heavy-gauge, polished aluminum.
- Coil and baffle hangers are heavy-gauge die-stamped aluminum channel punched with keyslots for easy attachment.
- Matched baffles for left and right sides furnished if specified.
- Special-sized baffle cooler coils are also available.

See your wholesaler or write for Bulletin 1057.

WATCHDOG OF THE NATION'S FOOD AND COMFORT — LARKIN

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ATLANTA 1, GEORGIA

WATER COOLER

10 GALLON PRESSURE TYPE

$139.50

*To DEALERS ONLY

- STURDY • ECONOMICAL
- STAINLESS STEEL DRAIN TOP
- NICKEL FINISHED COPPER COOLING TANK
- ⅓ H.P. TECUMSEH HERMETIC UNIT
- PRE-COOLER
- 5-YEAR WARRANTY ON REFRIGERATION CYCLE

REMCOR Model CW-10A

Also 5 gallon Bottle Water Cooler—*$89.50

REMCOR PRODUCTS COMPANY
321 EAST GRAND AVENUE,
CHICAGO 11, ILLINOIS
manufacturers of water coolers since 1940

SEND FOR REPRINTS

"SERVICE MAINTENANCE CONTRACTS AND AVERAGE CHARGES FOR SERVICE PARTS AND OPERATIONS."

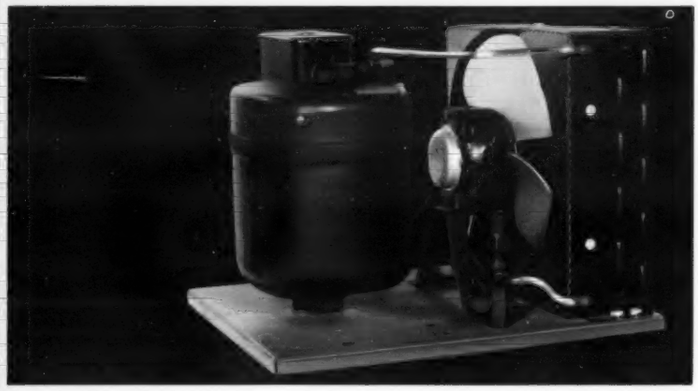
Only 50¢ each.

For your copy, clip this ad and mail with name and address to: Air Conditioning, Heating & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

"5th DEGREE" TESTING AVOIDS REJECT "RAPS." You can't pin a reject-causing rap on this compressor. Like all Bendix-Westinghouse compressors and condensing units, it was completely checked out at the factory. Five separate operating tests were made—suction pressure, head pressure, low-voltage operation, over-all performance and efficiency. Sure, it takes extra time to make these checks, but it pays off by eliminating line rejects for our customers—by as much as 75%. Why not look at the details of a new Bendix-Westinghouse condensing unit of compact design appearing on the back of this page and see how it makes possible less first cost, less operation cost and more refrigeration space.

Bendix-Westinghouse **MOTOR COMPRESSORS**

NEW BENDIX-WESTINGHOUSE CONDENSING UNIT LETS YOU DELIVER LESS FIRST COST, LESS OPERATING COST, MORE REFRIGERATION SPACE



Manufacturers of beverage coolers, vending machines, water coolers, dehumidifiers, and other general commercial-type cooling equipment will welcome this newest Bendix-Westinghouse development!

The Bendix-Westinghouse Model BYCH25 ¼-h.p. Condensing Unit is ideal for low-cost, high-volume applications. Its compact design permits refrigerated compartment space to be increased to give more cold capacity area in standard-size cabinets.

The secret of this new refrigeration advance?

The new Bendix-Westinghouse "Oval-Line" motor compressor—latest improvement in compressor engineering. The motor is of two-pole design, which means lighter weight, smaller size and lower cost.

The BYCH25 also has new and better motor insulation, inherent overload protection, full suction gas cooling, positive pressure lubrication and glass terminals, all of which contribute to a longer, more dependable operating life.

If you use fractional-horsepower compressors or condensing units in your manufacturing operations, it will pay you to get *all* the facts on the *new* Bendix-Westinghouse BYCH25—latest and best news in condensing units. Call or write direct.

Bendix-Westinghouse

EVANSVILLE, INDIANA

A Division of Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio
Export Sales: Bendix International, 205 E. 42nd St., New York 17, N. Y.

Noise Complaints Found To Be Major Problem with Gas Air Conditioning

Appliances shall operate without objectionable noise. Sect. 2.6 of Z21.40-1959 gas air conditioning standard.

A homeowner in Cleveland installed an absorption type air conditioner in his basement, replacing a heat pump which had been "too noisy." Within a short while, he replaced the absorption unit with a simple gas furnace because the air conditioner with no moving parts was "too noisy." While it later developed that he neither needed nor desired cooling, his complaint of noisy operation is a common one and one which was repeatedly met by the NEWS in its contacts with owners of gas air conditioning.

As indicated in another article, service problems on absorption equipment, both Arkla and Bryant, have been low. Service problems and noise complaints are higher on engine-driven equipment.

Neighbors Complain About Engine-Driven Air Conditioning

Complaints against engine-driven equipment come as frequently from neighbors as from owners, because the condensing units are usually mounted outdoors. The noise problem is being attacked by muffler systems. Frequently the muffler is buried in the ground; this is partly to reduce sound level, partly to get the hot exhaust-carrying tubes out of the way.

While proponents of engine-driven equipment insist that sound levels from their equipment is no higher than of competing electrical units and that "where noise is a real problem, neither unit can be used," the fact is that users and observers are almost unanimous in the opinion that the gas-fired compression systems are noisier than their electrical counterparts, but that the units can be sold over this objection because of other advantages.

Absorption Units Also Have Sound Problem

Surprisingly, absorption equipment, "with no moving parts," comes in for a noise complaint. This is true chiefly of Arkla's unit which makes a crackling, percolating sound when it starts up.

According to Russel Loyd Brown, manager of Arkla's heating and air conditioning products, the sound comes from the collapse of vapor bubbles which are generated at the point of flame intensity and travel to areas of colder solution. "The very fact that all of this takes place in a high vacuum intensifies the collapsing crackle. Once the solutions are at operating temperatures, the crackling stops."

Two approaches have been taken so far to licking this problem. Arkla has supplied "sound suppression kits" to retard the transmission of the noise. This includes wrapping all exposed transmitting piping with insulation and a sand-asbestos mixture for application around the generator section to absorb the crackling sounds.

Some installation/service contractors have experimented with cycling the unit burner just enough to prevent the solutions from getting so cold that they cause collapse of the vapor bubbles.

Actually, the sound is of short duration and very likely would not be noticed if the units were mounted outdoors, is the feeling of several contractors. One, in Texas, points out that when the units are installed in the normal utility room (located near the center of the house in conventional Texas construction) the noise complaints are numerous. If the contractor can convince the purchaser to have the unit installed at the perimeter of the house, the noise complaints are greatly reduced.

It is generally agreed that Bryant's absorption unit, good for cooling only and placed outdoors, has the least number of nuisance complaints regarding noise.

Too, it is generally agreed that many noise complaints are due to faulty application rather than to the inherent characteristics of the unit. Such items as the presence or lack of flexible connection in the ductwork, sound insulation, fan noise enter the picture, and good application plus good salesmanship can make the difference between complaints and acceptance of the unit's operating sound level.

Watts vs. Therms—Gas Billboards Next

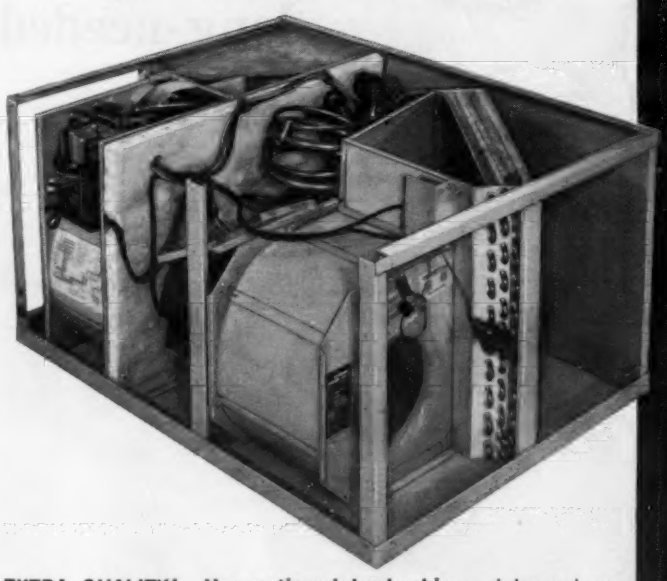
The battle of the fuels has many interesting and sometimes humorous sidelights.

In Detroit, for example, the Michigan Consolidated Gas Co. uses a giant electric billboard to inform the city that "Gas Is Best" for everything from drying clothes to cooling the house. "To tell us that gas is best, they consume 95,000 watts of electricity," chuckles the competing Detroit Edison Co. with some exaggeration.

Such a paradox may not long endure if Arkla has its way. It has developed gas billboards — large painted glass signs illuminated with multiple gaslights. The company has gone so far as to produce a unique photoelectric cell which will generate its own current for flashing the sign on and off.

"So that no one mistakes our signs for electric ones," smiles R. K. Eskew of Arkla, "we intend to mount one or two conventional gaslights with each gas billboard."

BUILT BY Amana®



EXTRA QUALITY!—Unquestioned leadership and know-how backed by years of experience and superior craftsmanship in the commercial and home refrigeration products field!

EXTRA QUALITY!—Amana-built coils, designed and manufactured in Amana's own coil plant to the most rigid specifications, provide up to 10% increased BTU capacity. Strict quality engineering controls assure clean, dry coils that are virtually service-free!

EXTRA QUALITY!—Four-way anti-rust protection for longer life, better performance—at no extra cost to you! All steel parts in Amana central system units are zinc coated, then bonderized and finished with two coats of special formula Epoxy resin enamel baked on!

EXTRA QUALITY!—Amana-built blower housings! Blueprinted and engineered by Amana to the highest quality standards. This means finest performance, quietest cooling possible!

EXTRA QUALITY!—Minimum field installation! Package units are pre-wired, incorporate auxiliary drain, need only simple wire and duct connections. Remote units have factory installed service valves, liquid line sight glass and dryer. New air flow design allows in-out air flow from same end.

For the most valuable franchise in the potentially vast field of Central System Air Conditioning, see your nearest Amana representative or mail coupon to Amana Refrigeration, Inc.

Amana® BACKED BY A CENTURY-OLD TRADITION OF FINE CRAFTSMANSHIP

AMANA REFRIGERATION, INC., AMANA 14, IOWA

YOUR GUARANTEE OF EXTRA QUALITY AT NO EXTRA COST IN Amana CENTRAL SYSTEM AIR CONDITIONERS AND HEAT PUMPS

From blueprint stage to installation, Amana Central System Air Conditioners and Heat Pumps are Amana designed and manufactured to give you extra quality at no extra cost. Your assurance of extra profits through easier sales, less installation time, fewer maintenance call backs.

The complete Amana Central System Line offers models for every installation, every climate. There's a range of 2, 3, 4 and 5 H.P. Heat Pumps and Cooling Units in both package and remote models to satisfy all your customers with year 'round living comfort.

Amana Refrigeration, Inc.
Amana 14, Iowa

Please send me complete information on Amana Central System Air Conditioners and Heat Pumps right away!

Name .....

Company .....

Address .....

City ..... Zone ..... State .....

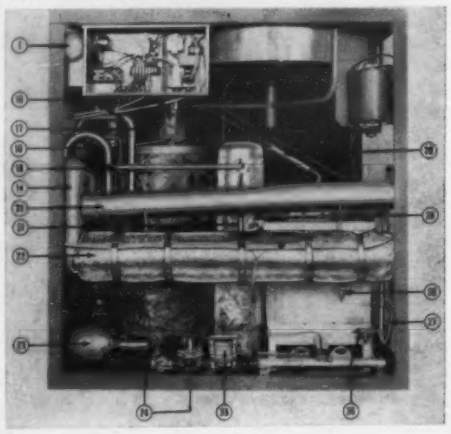
The Bryant Story

New Manufacturer of Gas Absorption Unit Predicts That It Will Have Sold 4,000 Through August, 1960

With 12 years of Carrier-Bryant research to draw upon, Bryant Mfg. Co., in 1959 introduced its ammonia-water absorption air conditioner, adding a second absorption unit to the market. As described in the Sept. 28 and Oct. 4, 1959 Techcenter discussions, the Bryant unit is a remote air-cooled chiller designed primarily for add-on applications. Even in this short time, the equipment has found good acceptance, the NEWS found, in spite of a few problems mentioned in this article.

●

INDIANAPOLIS—With only one marketing season behind its gas air conditioners, Bryant Mfg. Co. finds itself operating at peak production to meet demand. "We anticipate the sale of about 4,000 units through August of 1960, with the sales divided nearly equally between the 3 and the 4½-ton models," predicts Keith Davis, manager of gas air conditioning.



INTERIOR VIEW of Bryant absorption water chiller. Numbers are for component identification as described in Techcenter mentioned in the accompanying article.

Sees Distribution by Utilities for Several Years

The company expects that most of its production for "several years" will be absorbed by utilities; some gas air conditioners are also being moved to market through existing organization of Bryant distributors and branches. One of the most aggressive merchandising utilities in the South, for example, acts almost as a direct sales agent for other gas air conditioners, but serves as a dealer for the local Bryant distributor.

"Of course, utility interest and enthusiasm for gas air conditioning have been the greatest factors in the sales pattern," Davis agrees. Bryant conducted its highly successful field test in 1958 with the cooperation of 42 gas companies which placed 75 units throughout the country to assure experience under a wide variety of climatic conditions.

The NEWS heard high praise, generally, of the thoroughness and care with which Bryant conducted its development work and field tests. There were a few grumbles about Bryant's "leaving us high and dry with the units" but Davis told the NEWS that the field tests would not have been as valuable had the company "nursed each installation along. We wanted to know if our units were ready to go in and operate, if our shipping and installation instructions were explicit and understandable. The way to find such things out is to 'merchandise' the field tested units as though they were long-time production items."

Hitting Hard on 'Silent Gas Flame'

Hitting hard on the "silent gas flame burning out of doors" theme, Bryant has aggressively sought the add-on market with its gas air conditioner which "adds neither heat nor noise to the conditioned area." The company can also get the year-round market by selling its own line of furnaces with the absorption unit.

One factor favoring Bryant's remote unit is the fact that it is air cooled. As indicated in other discussions in this issue, it is conceded by many in the gas industry that the gas units must go air cooled if they are to take more than a minimal share of the central air conditioning market from their electrical competition.

Bryant's Sales 75% Residential

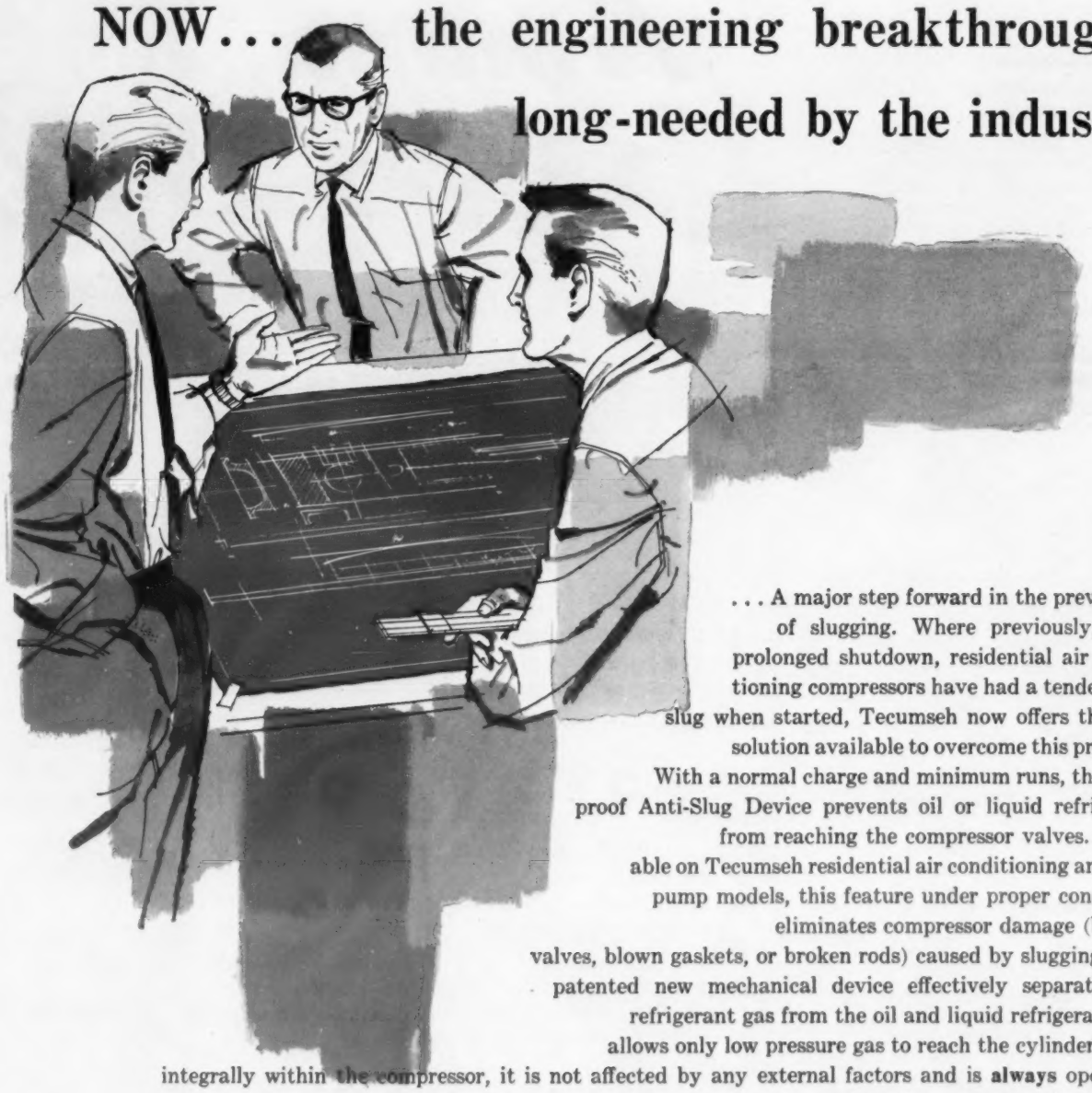
Bryant's sales, so far, have been 75% residential and 25% commercial, these figures based on the analysis of customer warranty return cards. "It is our feeling that with the larger unit now in the line, our ratio will be more like 50-50," states the company.

On a unit cost basis, the Bryant unit is less expensive than its gas competition, somewhat higher priced than its electric competition. However, the company, like most of the gas industry, points to operating cost savings and longer life expectancy to overcome objection to first cost differential.

There were a couple of problems encountered with the Bryant units in the field. Some of the very first units shipped were found (by Bryant) to have defective rubber in the check valves. However, so close was the company controlling its sales and service that the defective rubber was replaced in the field so rapidly that, in many instances, the NEWS found the customer did not know anything was amiss. Swelling, the rubber would prevent full closing and opening of the check valves resulting in a lowered cooling capacity and high operating costs.

Problems resulting from improper setting of burner inputs

NOW... the engineering breakthrough long-needed by the industry...



. . . A major step forward in the prevention of slugging. Where previously, after prolonged shutdown, residential air conditioning compressors have had a tendency to slug when started, Tecumseh now offers the best solution available to overcome this problem. With a normal charge and minimum runs, this foolproof Anti-Slug Device prevents oil or liquid refrigerant from reaching the compressor valves. Available on Tecumseh residential air conditioning and heat pump models, this feature under proper conditions eliminates compressor damage (broken valves, blown gaskets, or broken rods) caused by slugging. This patented new mechanical device effectively separates the refrigerant gas from the oil and liquid refrigerant and allows only low pressure gas to reach the cylinder. Built integrally within the compressor, it is not affected by any external factors and is **always** operating when the compressor is running.

A new internal thermostat developed at Tecumseh follows motor temperature with extreme accuracy and removes the compressor from the line at a safe temperature level. The thermostat like the Anti-Slug Device—is unaffected by outside variables and therefore protects the motor to extremely close limits. This is particularly critical in heat pump applications which operate over a wide range of ambients. These features are positive proof that Tecumseh alone offers the industry compressors specifically designed for the residential market.

and adjustment of pilots rank surprisingly high in an analysis of service calls, but it is generally agreed that this is due more to the newness of the equipment than anything else. "Gas people have been lighting pilots and adjusting burns for years; it's just that they are unfamiliar with the absorption air conditioners, so they call for a factory man before looking for simple causes of malfunctioning," explains one Bryant distributor.

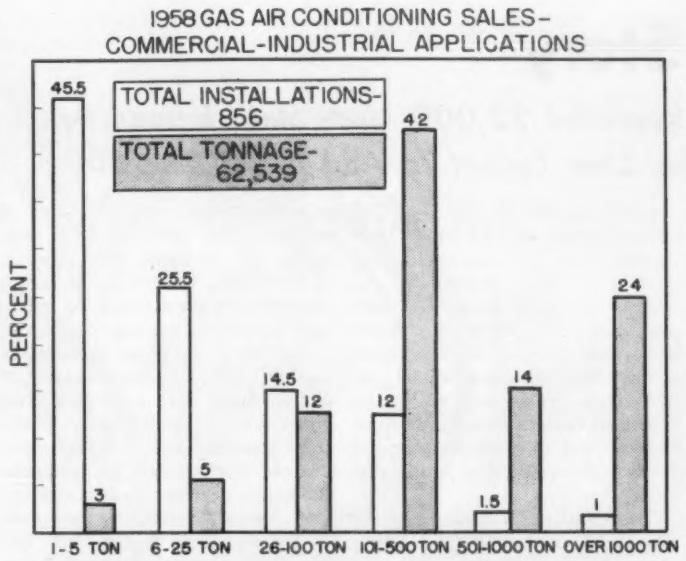
As is always true with new items, improper installation causes problems not actually due to the units, themselves. Thus, if a Bryant unit is mounted too high off the concrete slab, underdrafts may blow out the pilot. Properly installed units have withstood full winters, piled high with snow, and have taken right off in spring. Although it is not recommended, Bryant units may be left energized during the winter, except for the thermostat's setting being on heating, without adverse affect on the equipment.

Day & Night Mfg. Co. and the Payne Co., both of La Puente, Calif., and both, like Bryant, subsidiaries of Carrier Corp., are responsible for sales of the ammonia-water gas air conditioner west of the Rocky Mountains, but all the units are produced by Bryant.

* * *

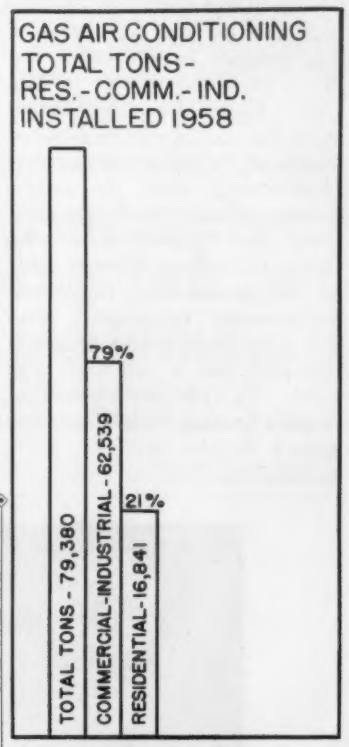
Bryant Mfg. Co.

Equipment: Ammonia-water absorption remote chiller
Capacities: Model 36-450—36,000 B.t.u.h.
Model 54-450—54,000 B.t.u.h.
Gas Consumption: 40 cu. ft./ton/hr.
Sales-to-date: About 3,000



1 TO 5 TONS—388 Installations, 1,621 total tons; 6-25 TONS—218 Installations, 3,129 total tons; 26-100 TONS—124 Installations, 7,457 total tons; 101-500 TONS—106 Installations, 26,312 total tons; 501-1,000 TONS—13 Installations; 8,960 total tons; OVER 1,000 TONS—7 Installations, 15,060 total tons.

Statistics Show Growth of Gas Conditioning



* * *

By the end of 1957, there were an estimated 14,154 residential gas air conditioning installations. Of some 600,000 central systems installed in homes at that time, gas units accounted for less than 2.5%.

In 1959, between 12,000 and 13,500 gas-operated units were sold to residential and small commercial applications; this represented 6 to 6.8% of total central air conditioning sales in these categories—200,000 units.

For 1960, gas air conditioner manufacturers are predicting the sale of 20,000 residential-size units, with the ratio of residential-to-small commercial hovering near 50-50. An idea of the growth of gas air conditioning is obtained when it is recalled that there were 2,400 gas-operated units sold in 1957, 7,500 in 1958, and about 13,000 in 1959.

It is expected that in 1960, only 75% of all **electrical** central residential cooling will be in homes with gas heat, compared to 81% in 1956.

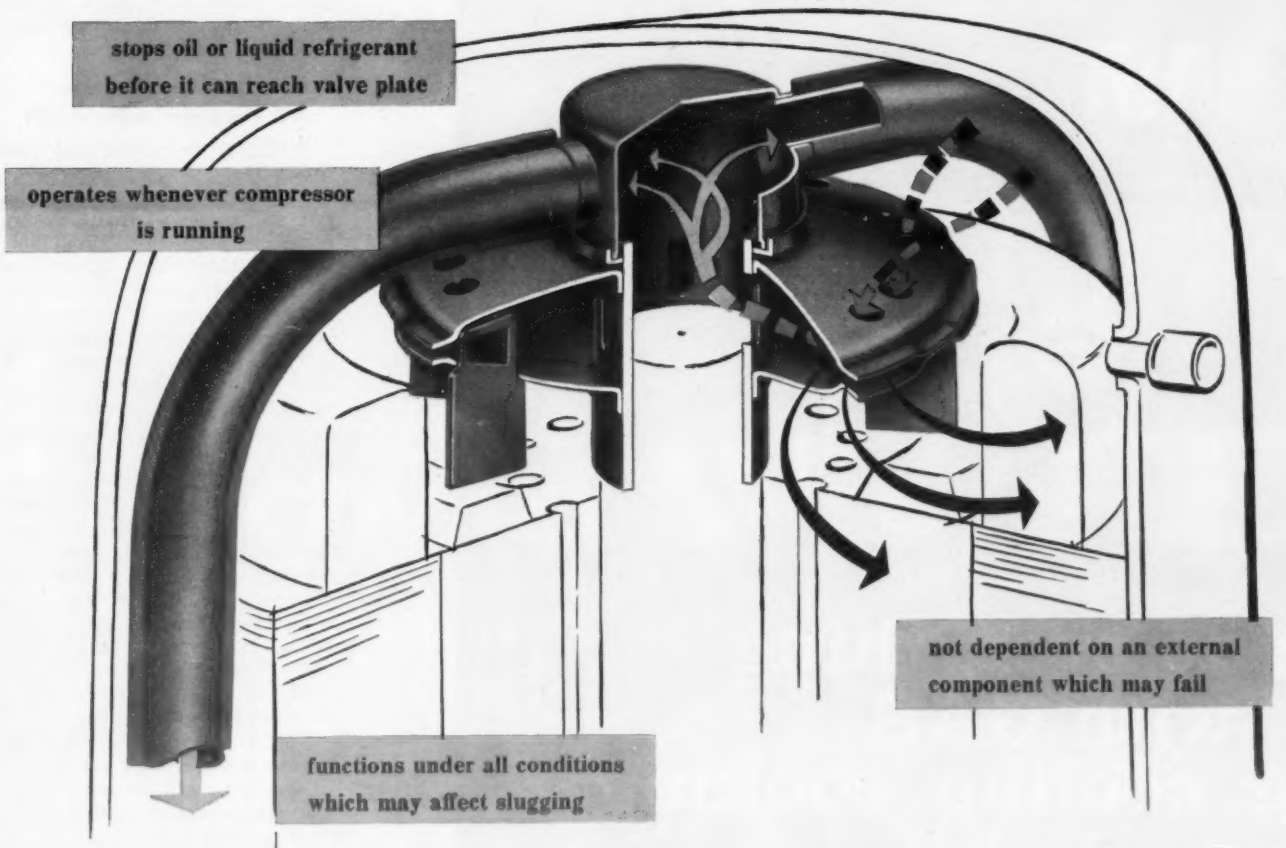
"Big systems," absorption and steam turbine-driven centrifugal compressors are expected to increase this year. Absorption equipment normally gets over 80% of such large systems in the 100-500-ton range, according to AGA, and there will probably be some 500 such installations in 1960. Assuming only half of these 500 systems use gas as the ultimate heat source, the AGA expects a consumption of over 4 billion cu. ft. for cooling.

Where the demand is for more than 500 tons of cooling, the steam turbine centrifugals will take a share of the market.

According to AGA the total big systems market for 1960 will approach $700 million, some 10% over last year. The gas industry stands to get "an appreciable percentage of this booming market."

No figures are available on expectations of the manufacturers of larger tonnage gas engine-driven equipment.

TECUMSEH'S exclusive *NEW* ANTI-SLUGGING *FEATURE*


stops oil or liquid refrigerant before it can reach valve plate
operates whenever compressor is running
not dependent on an external component which may fail
functions under all conditions which may affect slugging

The new Tecumseh Anti-Slug Device consists basically of two assemblies. One is the centrifuge which is press-fit on the crankshaft and therefore rotates at the speed of the compressor. The suction of the piston pulls in the refrigerant and oil mixture in the dome through the holes on top. The paddles help in breaking up this mixture and the liquid refrigerant and oil are expelled through the slots by centrifugal force. The gas, being lighter, is drawn through the slots in the hub. The second assembly is merely a collection pan which has two tubes leading to the cylinder heads and the valves. This assembly is stationary and fits over the hub of the centrifuge, directing the gas to the cylinders. With a normal charge, little if any oil or liquid refrigerant reaches the valves, thus greatly minimizing the possibility of slugging. This exclusive feature is one more example of industry progress made possible by Tecumseh engineering advancements.

forty million compressors in the field

TECUMSEH PRODUCTS COMPANY

MARION, OHIO
TECUMSEH, MICHIGAN

FOREIGN OPERATIONS DIVISION Tecumseh, Michigan

CANADA: Tecumseh Products of Canada, Limited, 1667 Dundas St., London, Ont.

The Arkla Story

Sales Have Exceeded 23,000 Units Since Introduction Of Sun Valley Line, Expect To Add 10,000 In '60

Picking up the ball where it was dropped by the old Servel air conditioning group in late 1957, Arkla Air Conditioning Corp. has moved into undisputed leadership in residential gas air conditioning with its water-lithium bromide absorption unit. With over 23,000 units sold, Arkla is roaring through 1960 at full production. In March, for example, the company shipped 1,300 units; Servel's previous peak for a full year was 2,400. (A full description of Arkla's heating-cooling unit appeared in the Dec. 14, 1959, Techcenter.)

LITTLE ROCK, Ark. — "Our 1960 volume will be more than 10,000 units, which is about 43% ahead of '59," states W. G. Wepfer, Arkla general sales manager. "In 1959, our sales were split nearly even between commercial and residential applications. With our newly introduced remote Sun Valley line, we may see this ratio change in favor of residential construction."

The new unit mentioned by Wepfer is model 500C, a water chiller-heater unit with an evaporative cooler in a single package for mounting outside. The present year-round unit is installed indoors and is a direct expansion unit, rather than a chiller. The first of this new group of products will have a 42,000 B.t.u.h. cooling capacity and 120,000 B.t.u. input on heating, according to the company.

The large increase in sales is due in large measure to the development of a direct-fired generator to replace the cumbersome gas-fired boiler needed with the old Servel unit to generate the steam to operate the absorption unit. Actually, the first extensive field testing of the direct-fired units began under Servel in 1954-5, and improvements in it were made until the introduction of Arkla's equipment. Direct comparison of performance and operating cost left no doubt that the new unit was superior to the old Servel. (Arkla will continue to use the Servel name until five years from date of purchase.)

AN ARKLA-SERVEL Sun Valley 5-ton gas unit installed in a basement recreation room.

Arkla, actually a subsidiary of a gas utility—Arkansas Louisiana Gas Co.—sought the help of gas utilities in its merchandising efforts. (See article on merchandising elsewhere in this issue.) Today, most of Arkla's sales are carried on by merchandising utilities, and as indicated in the article on utilities, these companies usually provide service for the units. In those states, such as Oklahoma and California and some 10 others where utilities are prohibited by law from merchandising, Arkla is working through a growing number of dealers. In these cases, the utilities work closely with the dealers in getting leads and closing the sales.

Arkla Has Cooperative Ad Program with AGA

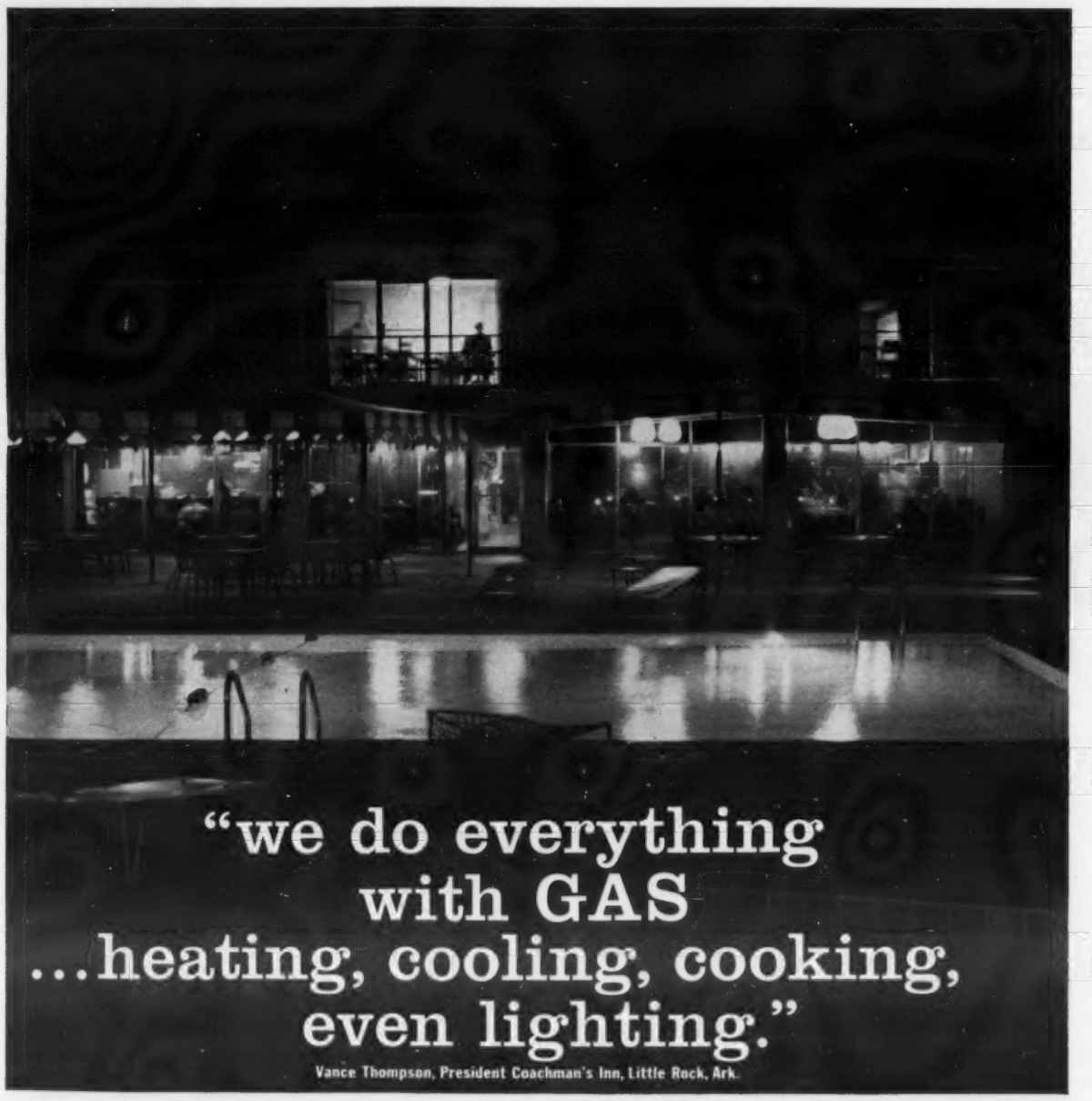
While much advertising and promotion is performed by utilities, Arkla generates its own and cooperative advertising programs with AGA. For 1960, the company has allotted a minimum budget of $250,000 for this purpose, and this amount is supplemented with promotional or incentive allowances. A heavy, well-detailed "Plans Book" has been mailed to the industry to help sales promotion efforts at the local level.

Most gas utilities are enthusiastic supporters of Arkla's efforts, but there are a few who make one complaint or another against the units. "For one thing, in our area the unit brings more revenue to the electrical utility than it does to us," states one. Checking utility records, the NEWS found this true in those areas where the cost of electrical power is considerably higher than the equivalent cost of gas and in those areas where the accompanying water tower is necessary.

On the "Sun Valley 500," 590 watts of electricity are used for controls and the fan; a TJ 10 accompanying cooling tower consumes 240 watts for its fan, 430 watts for its pump. The larger Sun Valley 750 consumes 750 watts; its accompanying TJ 15 cooling tower uses 490 watts on the fan, 600 on the pump. The new remote chiller will consume 250 watts for its evaporative cooler fan, 400 watts on the chiller pump, 50 watts for the control circuit, and 450 watts for air handling at 1,400 c.f.m. against 0.35-in. external static pressure.

Arkla turns the objection about relative electric and gas revenue to good use with the combination utilities, those

(Continued on Page 17)



The new Coachman's Inn...a 258 unit downtown motel in Little Rock . . . is the last word in ultra-modern convenience and comfort. In the words of satisfied guests, it has everything.

And everything there that depends on fuel depends on GAS, the most flexible modern fuel. Even the electricity used at the Inn is produced by a gas-driven generator!

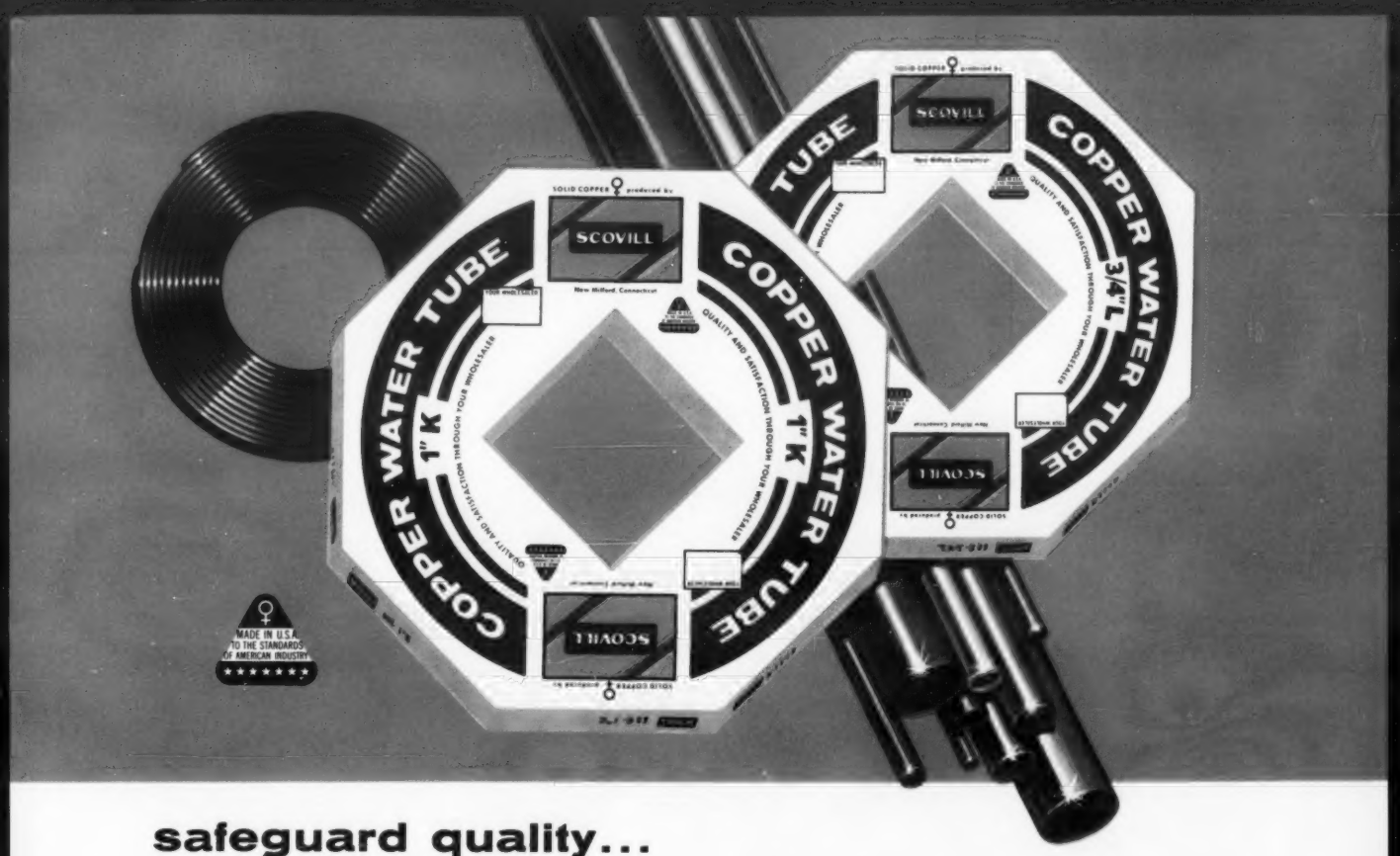
Year 'round air conditioning for the Inn starts at a gas-fired boiler. In summer this boiler furnishes the source of energy for a series of Arkla-Servel gas absorption cooling units. In winter the same gas-fired boiler heats the Inn.

Air-conditioning is only part of the job for gas at the Coachman's Inn. Gas cooks the meals. Heats all water, including the swimming pool. Illuminates the decorative Arkla Gaslites. And, in gas flambeaux, adds a dramatic touch to the beautiful Sunken Patio.

No wonder the owners say, "We do everything with GAS." If you plan to build or modernize any building, check the efficiency, flexibility and economy of gas. Gas absorption cooling can put your heating plant on a year 'round paying basis.

For specific details, call your local gas company, or write to the Arkla Air Conditioning Corporation, General Sales Office, 812 Main Street, Little Rock, Arkansas. AMERICAN GAS ASSOCIATION.

FOR HEATING, COOLING, COOKING
...GAS IS GOOD BUSINESS!



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name your brand...

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there's no finer ***quality control*** *than that which safeguards*

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made better to bring out the ***BEST*** *in every installation*

Smart contractors have learned that it pays more than ever today to be *sure* of the quality of materials going into every job, large or small.

There's only one way to do this . . . NAME YOUR BRAND and look for the MADE IN U.S.A. Only when you do this do you enjoy the full quality-protection of your own tight U.S. industry standards.

So, the next time you visit your Wholesaler, call for Scovill.

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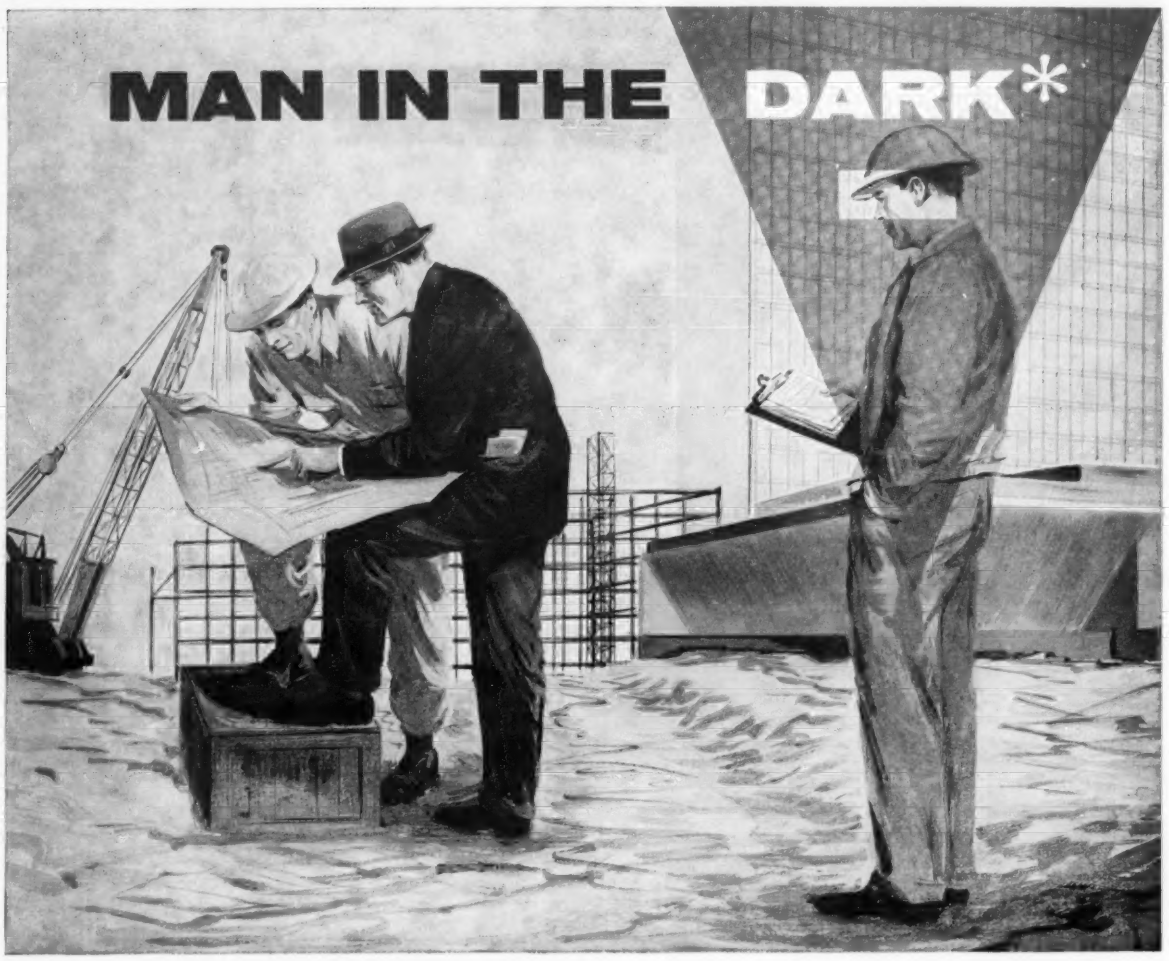

*"They knew about it . . . why didn't I?"

It's easy to single out the "man in the dark"—the man who doesn't read the NEWS.

He seldom takes the initiative. He contributes little to problem-solving sessions. He's rarely in the picture when important decisions are made.

But to the over 22,000 influential subscribers of AIR CONDITIONING, HEATING & REFRIGERATION NEWS, there's not a shadow of a doubt about what's going on in their fast-growing, fast-moving industry!

These are the men whose daily activities make the weekly headlines in the NEWS. They are equipment manufacturers, consulting engineers and architects; service and installation contractors, dealer executives, distributors and field sales-service personnel. They are important to their industry, and they're important to you.

NEWS readers rely on the only weekly newspaper of the industry for authoritative, current facts about residential, commercial and industrial air conditioning, heating and refrigeration. Because they're informed week-by-week of changing trends and happenings vital to their progress, they're equipped to act!

Why not let the publication that does the most for the men who specify and purchase your kind of products and services do the most for you?

Your NEWS Representative has all the facts and figures you need to shed some strong light on effective, selective advertising in your most important markets. See him soon.

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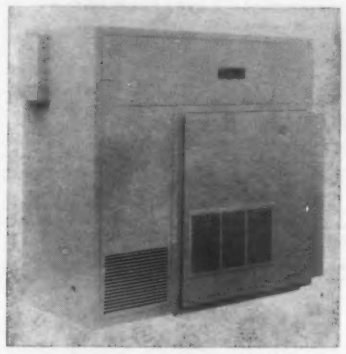
Reaching these MARKETS	Serving these FIELDS
• Air Conditioning	• Residential
• Heating	• Commercial
• Refrigeration	• Industrial



ARKLA-SERVEL "Remote Sun Valley" package chiller for outside installation. Unit contains own evaporative cooler.

Arkla Story--

(Continued from Page 14)

which serve both functions. The argument here is that the utility can add to its gas summer load without taking anything away from its electrical load.

Another objection encountered by the NEWS has to do with the size of Arkla's year-round units. Some utilities, for example, subsidize sales for dealers by paying for shipment and delivery of the units. One company told of delivery to an existing older home where the cost was $400 just to put the unit in place. In this case, part of a wall and stairwell had to be removed and replaced.

Arkla Unit Going Mainly Into New Homes

Because of its size, the Arkla unit is going mainly into new homes where "the house can be built around it." The new remote unit, of course, will overcome this objection.

However, some have questioned the advisability of placing a heating unit outdoors. They argue that the heat loss on a winter day is considerable. R. K. Eskew, Arkla vice president, states that tests have shown that maximum heat loss on a zero degree day is 10%. "And in summer there is no heat gain in the house from the unit."

While there is no definite statement from Arkla on the subject, it is well known that the gas industry is considering the use of pumps to help reduce the size of absorption units. (See Techcenter.)

Service Has Proved No Major Problem

Service of Arkla's units, the NEWS found, has proved no major problem for the company. As discussed in the article on service, purging and controls seem to cause most service calls, and service contracts are being offered at quite low costs. Arkla claims less than 0.3% of its shipped units have needed major repair on the refrigeration cycle itself. It has established an average service cost of only $5 "per operating unit per year," according to sales manager Wepfer.

Determined to hold its lead and to increase its "5 to 6%" share of the central air conditioning market, Arkla has plans to round out its line so that there will be units with 3½, 5, 7½, 10, 15, 25, and 50-ton cooling capacities.

The company has supplied a ¾-ton unit to a university for experimenation with solar power.

Arkla has also sold several hundred 25-ton absorption chillers. Their newest units, Series 3000DF are direct-fired and eliminate the fuel losses inherent in the generation and handling of steam. Thus, the normal Series 3000 units consume up to 27 cu. ft. of gas per ton per hour while the direct-fired units have been found to consume as little as 22.4 cu. ft./ton/hr.

Sales of the 25-ton chillers for the first quarter of 1960 are well ahead of sales for the same period last year, according to Arkla.

* * *

Arkla Air Conditioning Corp.

Equipment: Water-lithium bromide absorption units

Capacities: Model 500—42,000 B.t.u.h. on cooling—96,000 B.t.u.h. at bonnet on heating
Model 500C—42,000 on cooling—96,000 at bonnet on heating
Model 750—60,000 on cooling—96,000 at bonnet on heating
Model 750H—60,000 on cooling—144,000 at bonnet on heating
Series 3000 Water Chiller—300,000 B.t.u.h., "25-ton"

Gas Consumption: About 24 cu. ft./ton/hr. for residential units
about 26 cu. ft./ton/hr. for Series 3000 chillers
about 22.4 cu. ft./ton/hr. for new Series 3000 direct fired

Sales-to-date: Over 23,000

PAR Pays Off

Organized in 1944, the PAR program of the gas industry has served as the aggressive core of that industry's activities and growth, and it is now devoting considerable attention to gas air conditioning, termed "a pearl of great price."

The **P** stands for promotion which embraces nationally coordinated plans to stimulate sales of all equipment which consumes gas.

A stands for advertising which is being aggressively carried out in consumer magazines, business papers, billboards, radio, and television.

R is for research, very actively conducted. The research activities of the industry pertaining to air conditioning are mentioned elsewhere in this issue.

Warm air contractor gets cooling job in wet heat building... AND SAVES 20%! SEE PAGE 22

Introducing the Arkla

VAPORGLIDE

Arkla-Servel proudly announces a design and engineering vehicle which:

1. Gives ⅓rd more power without pistons or valves.
2. Provides lowest ownership cost... full 5-year warranty.
3. Is vibration-free... never needs a tune-up.
4. Has double and triple normal life expectancy, because there are no moving parts to wear out.
5. Won't lose capacity or jump operating costs with age, because it has no efficiency-robbing friction.

No, that's not a space age automobile... it's the Arkla-Servel Sun Valley All-Year gas air conditioner, as it compares to conventional electric central system air conditioners.

If we were really describing a new auto, you'd probably never buy anything but the Arkla model. That's what we think about modern Arkla gas air conditioning, too.

And, if you find the comparisons a bit hard to believe, we respectfully invite you to talk to your local gas company, or write Arkla Air Conditioning Corp.

ARKLA-Servel MAGIC GAS AIR CONDITIONING

ARKLA AIR CONDITIONING CORP • SHANNON BLDG. • LITTLE ROCK, ARK.

They'll Do It Every Time

by Jimmy Hatlo

@&!#*!! SHAME THE WAY BIGDOME WORKS GOOD OL' WILBUR WILLING-HORSE AN' NEVER GIVES HIM A CHANCE AT A BETTER JOB....
YEAH--IF ANYBODY DESERVES A BREAK IT'S GOOD OL' WILBUR--MOST CONSCIENTIOUS GUY IN THE JOINT....
ALL HIS FELLOW OFFICE WORKERS FELT BAD THAT HARD-WORKING WILBUR WASN'T APPRECIATED BY THE BOSS....
WELL, WILBUR'S NOW BEEN MADE OFFICE MANAGER... AND LISTEN TO THE ANVILBERG CHORUS....
HIM, MANAGER?! I TELL YA HE MUST HAVE SOMETHING ON BIGDOME!!
YEAH! NOTHIN' BUT A @&!#*!! HANDSHAKER! GOT IT BY PULL!!
RANK FAVORITISM!! WILLINGHORSE WOULD STEP ON HIS OWN GRAND-MOTHER TO GET AHEAD!!
MANAGER
THANX AND A TIP OF THE HATLO HAT TO FRED FLACK, 3668 GWENN GATE, SEAFORD, LONG ISLAND, N.Y.
3-24

Gassing About Gas Air Conditioning

GAS INDUSTRY has been panting for this to happen—and for a long, long time. At last! Gas-powered engines, which can power *compressor* systems for air conditioning, have arrived in force.

Hitherto gas was confined to absorption-type cooling cycles. Meritorious though they may be, absorption systems have limitations in certain application areas.

Ready-Power, pioneer in the field, now is supplying gas-engine-driven compression systems of proved versatility and economy to a steadily widening range of customers.

Moreover, Ready-Power has been joined recently by Robertshaw-Fulton. The latter firm has introduced a free-piston compressor (with one moving part) which is adaptable to natural or bottled gas. This device was developed by Battelle Institute.

To gas utilities, air conditioning shapes up as a potential life-saver. Gas companies lose money in most cities five or six months of the year—the warm months. These losses they must recuperate during colder periods when residential heating lifts their load factors.

That situation is reflected in the rates they charge users. Gas-fired air conditioning, if sold and installed extensively, could change the whole picture. Summer cooling by gas—pushed hard enough by utilities—undoubtedly would convert red-ink months into profitable periods.

That happy situation, in turn, would foster lower rates to consumers—thus making gas an even more attractive fuel.

Reverse side of the coin is that continued growth of electric heating and air conditioning systems for homes and buildings threatens the future existence of gas itself as a non-industrial power source.

Hence, as a defensive maneuver, gas utilities should get into air conditioning with both big feet. That they are eager to do so long has been apparent. Trouble has been: lack of equipment to sell.

Now they're in business to stay. Bryant is building a remarkably versatile and flexible (absorption-type) residential unit. Carrier and Arkla also have developed interesting products for gas utilities to promote. Arkla has been going great guns in the residential field.

Powerful RCA-Whirlpool and Borg-Warner are getting into the absorption-refrigerator act, also.

Happily, gas companies are faced with no capital investment problems when they snare an increased air conditioning load.

Electric utilities must build new facilities both to generate and distribute the additional "juice" required for air conditioning. In the case of residential installations, these additional distribution facilities (three-phase) are immensely expensive.

To gas utilities an extra air conditioning load is a different, far more profitable story. All they have to do is open the spigot a bit wider. Overnight, if needed, many of them can double their delivery capacity at practically no extra cost. To recapitulate:

(1) Gas utilities need the additional summer load which air conditioning can provide, because normally they lose money during the warm months.

(2) Inroads of electric-powered heating and cooking devices threaten to turn their profitable winter months into red-ink periods.

(3) Fortunately, gas-company probing into the air conditioning field requires no additional capital investment. All it calls for is activity in advertising, promotion, and selling.

To gas utilities, therefore, air conditioning can become (in modern slanguage) a real "gasser."

Incidentally, this industry is stepping up its research into new applications for the home. It also is seeking more efficient and less costly methods of industrial utilization, and improved distributive operations (including manpower expense) from gas well to the meter.

Looking even farther into the future, "gas people" are seeking a substitute for natural gas (fuel cell, thermionic and thermo-electric generation) just in case the wells run dry some cloudy day.

Chet Stackpole's American Gas Association research program had $1,750,000 to work with last year. It has set a goal of $6,000,000 annual budgets for further scientific studies during the 1960's.

These funds come from 180 of the association's 409 member companies, which represent 72% of the meters our nation polls. Mr. Stackpole lists these promising gas research projects:

Kitchen dingus which automatically will thaw and table-prepare frozen or partially-baked-or-cooked foods. The method probably will embrace forced convection.

Improved individual room heaters. They could help meet the competition of electric panel heating, and result in less expensive house piping. Gas-fired infrared burners will receive more research attention in coming years, too.

In both heating and air conditioning the AGA research target is: "greater efficiency in smaller sizes." Examples:

Transistor techniques to produce a sharp but safe starter spark in a small package without connection to electric lines. This spark will be generated directly from gas heat.

Production of pipeline gas from coal and oil shale economically. New means of detecting leaks in pipelines are sought, also. Isotopes (by-products of nuclear energy) could help here, although atomic energy itself probably won't be a natural gas competitor for years to come.

AGA's research crew this season also will attempt to reduce noise at regulatory or metering stations.

In short, don't sell gas air conditioning short. Soon it may become a genuine "gasser."

(Because of the length of this editorial "From Our Files" will not appear this week.)

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'The Conscience of the Industry'

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"I have always felt that whatever the Divine Providence permitted to occur I was not too proud to report. The people are not served by pussyfooting, or by that sort of journalism in which nobody will ask who is the editor of a paper or the writer of an article, and nobody will care."—*Charles A. Dana.*

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Onan Works with AGA on Gas Engine, Also Develops Own Unit for 1-5 Tons

Working with AGA on the development of a gas engine for air conditioning, D. W. Onan & Sons, Inc. also markets its own gasoline engine-driven compression system for refrigeration and air conditioning requirements of 1 to 5 tons. The company has developed and is preparing to field-test a compressor package this summer.

●

MINNEAPOLIS—Since 1957, Onan has been actively engaged in the design and development of a natural gas powered internal combustion engine compressor package. This unit is to provide the primary power for a vapor compression cycle gas fueled residential and small commercial condensing unit.

Many Design Configurations Studied

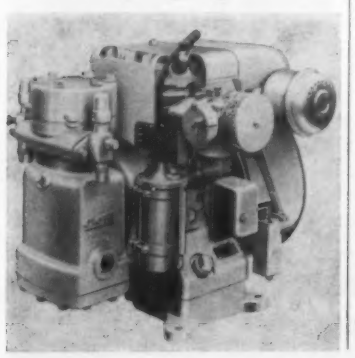
"Many design configurations were considered," states J. D. Menth of the company's development engineering staff, "and the decision was made to go with the specially designed two-cylinder vertical, in-line, vacuum flow, air-cooled engine. It has a displacement of 60 cu. in. and operates on the 4-cycle principle. It is directly connected to an Onan-built two-cylinder compressor of 12.56-cu. in. displacement which operates at 2,100 r.p.m. The compressor is designed to operate with R-22, and it produces 60,000 B.t.u.h. at 125° condensing and 40° evaporating. Fuel consumption is 115 cu. ft. per hour of 1,000 B.t.u.-gas.

For field testing, Onan has designed and built a number of complete condensing units incorporating the new compressor package. The photograph shows the condensing unit which measures 60¼ by 37⅝ by 35 in. high and contains automatic thermostat-operated controls, sound-conditioned housing, and air-cooled condenser.

"An Onan-coordinated field test of these units will be made by a number of gas utility companies this summer," according to the company. "Evaluation of this year's results will help determine our production plans for next year. Future plans are to make the engine-compressor package available to air conditioning equipment manufacturers to be incorporated into condensing units of their own design."

Intended primarily for mobile use, Onan's gasoline engine units have been applied in fixed installations where a self-powered air conditioning or refrigeration system is required or desirable.

* * *



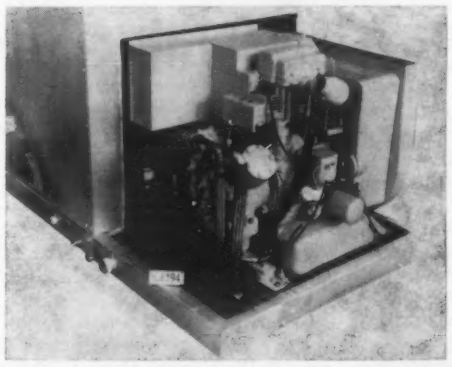
By mounting the compressor directly to the engine crankcase, Onan has achieved compactness and light weight as well as "the elimination of alignment and belt tightening problems, couplings, drive belts, and pulleys." A hub for the mounting of a condenser fan is provided on the front end of the engine crankshaft.

Provided in several sizes through the 1 to 5-ton range, the units consume from about half a gallon to just over one gallon of gasoline per hour of operation, according to the company.

On the AGA-sponsored project, Onan supplied five complete condensing units which were field tested last summer.

However, according to Robert B. Smith, assistant director of research of AGA, Onan decided that its business interests dictated a switch in engines from an "opposed" to an "in-line" configuration. "This was due to the fact that the company felt it necessary to enter the small diesel engine field with an interchangeable engine — one that would operate on natural gas, gasoline, or diesel fuel with a maximum of part interchangeability," added Smith.

"In view of the larger potential market of the basic engine, with a corresponding savings in first cost, the AGA task group agreed to continue the joint project with Onan. As a result, six complete condensing units incorporating the new engine are being built and will be tested this summer,"—the units described above by Onan.



PROTOTYPE of air conditioner using Onan-developed gas engine compressor.

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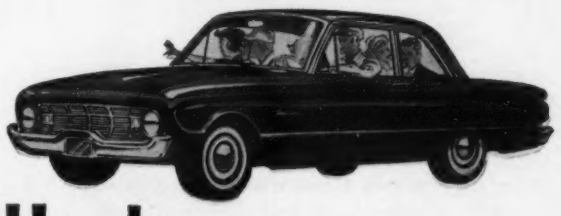

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Service Experience with Gas Conditioners

Despite the fact that there are very few moving parts on the Arkla and Bryant absorption units, there are service problems peculiar to them. On gas engine-driven systems, the refrigeration cycle is essentially identical to that on electrical compression units, but service requirements on the gas engine, itself, and its controls bring a new aspect into the picture.

It is to the credit of the gas industry that, so far, the combined effort of manufacturers and utilities has maintained service adequately for the 27,000 gas air conditioners now in use. Manufacturers are continually holding training classes for distributors, dealers, and utility service personnel; many utilities then conduct their own classes periodically.

Nevertheless, the increasing sale of present units and the definite prospect of new units reaching market pose a problem for gas air conditioning which it cannot afford to overlook. AGA is toying with the idea of national gas air conditioning school. There is also a strong possibility that the association may establish a subscription service similar to that it offers on ranges, gas controls, burners, and other phases of gas industry service.

This article reviews service experience on existing gas air conditioners. Read in addition to the state-of-the-art Tech-center and the page one cover story, the article gives an accurate picture of the performance impact made by the several gas units.

Absorption Units Require Less Than Engine-Driven Units

Any objective evaluation of the service requirements of gas air conditioners must conclude, first of all, that the absorption units require much less service than does gas engine-driven equipment. As indicated in other discussions in this report, problems with engine-driven compression systems have been extensive, so extensive that some gas industry authorities are embarrassed that these units must be considered "part of the family." One well-known utility service manager answered, "No, thank God," when asked if his company's sales department was pushing engine-driven units.

The disenchantment is more often with the gas engine than with the refrigerant side of the system. Even the newer long-life natural gas engines must have their oil checked, their spark plugs cleaned, points replaced periodically. While larger commercial and industrial users have maintenance men on their payrolls, the smaller commercial or residential owner has not. And these people cannot be expected to conduct such periodic checking and servicing.

According to one manufacturing source, the engine on an engine-driven unit, requires 10-15% of total maintenance expense, but this ratio is not reflected in reports obtained by the NEWS.

"We are forever having to add oil, check and replace bad rings," says another utility service manager, whose company offers service contracts on engine-driven units. "We will make the plug and point changes on schedule, but our contract specifically leaves the owner responsible for watching oil level—a problem which has plagued us even though units are equipped with oversize crankcases and with oil pressure protection."

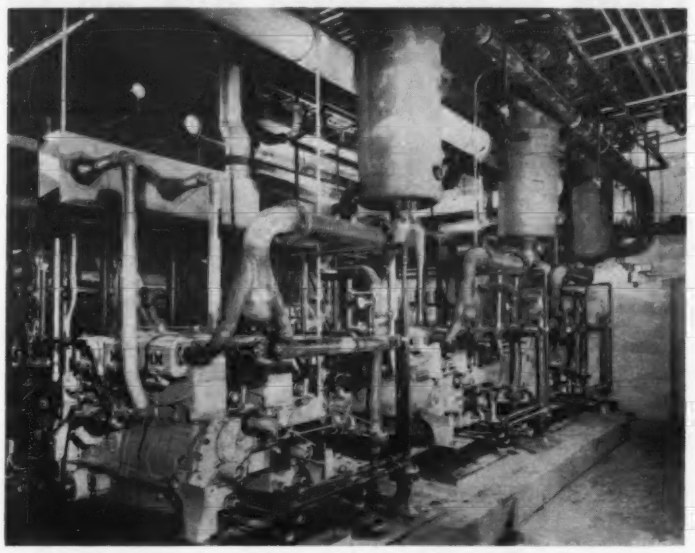
Another utility has spent as much as $1,200 a year servicing and repairing each of two 5-ton engine-driven units on its lines.

Service Operations List Shows Type Of Work Required

The following list of operations is included in a service contract which United Gas Corp. of Louisiana and Mississippi makes with users of Ready-Power gas engine-driven units.

a) lubrication of pumps and the Ready-Power unit; b) service heating equipment twice each calendar year; c) check gas input, regulate burners and carburetor; d) drain and clean cooling tower or evaporative condenser basin at seasonal changeovers; e) check all controls on the unit and heating equipment and adjust as necessary; f) drain crankcase and refill with new oil at end of operating season; g) change oil filter cartridge; h) clean parts in carburetor air cleaner; i) ad-

(Continued on next page)



'Largest Commercial Heat Pump Installation' Utilizes 5 Gas Engine-Driven Compressors

EDINA, Minn.—Claimed to be the largest commercial heat pump installation in the world, five gas engine-driven compressors supply heating and cooling for the Southdale Regional Shopping Center here.

All installed on a spring-mounted concrete slab, the five York Double "V"-type 16-cylinder, high-speed compressors are powered by five Minneapolis-Moline internal combustion engines operating on natural gas. Also on the slab are two water chillers, two condensers, and two receivers, and space for one more compressor.

The engines will operate at a top speed of 1,200 r.p.m. and are geared to give a top compressor speed of 1,800 r.p.m. Each engine will automatically modulate from 1,200 to 700 r.p.m., depending on load requirements. Maximum brake horsepower is 160 bhp. per engine at the 1,800 r.p.m. compressor speed.

A system of heat exchangers make use of the engines exhaust heat to supply heat to several areas and to store heat, if needed.

Warm air contractor gets cooling job in wet heat building... AND SAVES 20%! SEE PAGE 22

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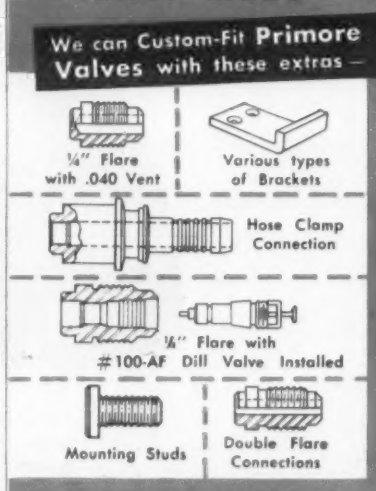
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Gas Air Conditioning Service--

(Continued from preceding page)

just water chiller controls.

Ready-Power recommends that plugs be cleaned, points and oil filter be changed every 1,000 hours of operation. The company also suggests that engine oil be changed every 400-500 hours and that the water level in the engine heat exchanger be checked at the same time.

Service Needs Diminish With Age of System

In the experience of several utilities, absorption units require less and less service on the refrigeration cycle proper as they age. Both Arkla and Bryant units require purging of noncondensables occasionally. Bryant recommends purging after 500 hours of operation; if the unit has cut out on high temperature for any reason; and if the unit has been opened for service. The company's newer units have a purge pot which collects noncondensables and from which they can be removed by cracking a valve.

The Arkla unit has a palladium cell whose function it is to dissipate any hydrogen formed in the system. However, the palladium cell is functional only when the unit is operating. Field men have found it necessary to purge the unit a couple of times the first season, but less after that. The addition of inhibitor solution to the cycle eliminates or drastically reduces formation of hydrogen, some service people report.

Again because the palladium cell is effective only during unit operation, some utilities have found that it is necessary especially to purge units which have been stored in a warehouse for several months. (Both Arkla and Bryant units are run-in at the factory and shipped completely charged.)

Stuck Valve Problem Solved Quickly

Bryant had some difficulty with stuck solution check valves on several hundred of its units, but the difficulty was quickly detected and corrected. A supplier of rubber, according to Bryant, had changed formulation without notifying them, and the new rubber swells in the ammonia-water fluids to which it is exposed. Field correction was relatively simple and the defective rubber has been replaced.

Bryant's original pressure relief device, a thin aluminum disc, failed in a few instances because aggressive environment attacked the disc externally. The new device is self-sealing and the relief member is not exposed to ambient atmosphere.

Some companies reported having to replace thermocouples on Arkla units after one or two years' operation. "Probably due to excessive amounts of gas at the pilot burner," estimates one source.

There has been some need to adjust tension of fan belts on cooling towers after they have been in the hot sun for a summer, states a Joplin, Mo. source. "They stretch the first year they are in service—fans slow up and condensing water temperatures go up."

Routine service calls on the Arkla unit call for keeping the tower clean, changing filters, oiling motors, startup on heating and cooling changeovers, and a mid-winter and mid-summer checkup by some utilities.

"The seasonal changeover must also include changing of air supply and air handling, especially in split-level homes," warns a Cleveland contractor.

The NEWS found almost universal agreement that problems with the absorption cycles, themselves, formed a small part of service calls on the Bryant and Arkla units. "Most service calls are on electrical controls, fan motors, safety switches," many service people told editors. "In this respect, our experience parallels that of electrical air conditioning where many service calls are not on the refrigeration cycle, itself, but on accessories."

Service contracts for absorption gas air conditioners are being offered for as little as $18 a year, the NEWS found. A more normal figure is $30-$35. The high figure was $60. While the service contracts are subsidized by some utilities, there are those who insist that their contract costs actually pay for the service rendered—at no profit other than keeping the unit on the line.

Thus, one utility shows its average labor cost per unit per year on absorption equipment is $15. Average cost for parts per unit is $3 in this same locality.

Operating pressures and temperatures in the Arkla and Bryant units are very different: the Arkla, a water-lithium-bromide unit—operates under vacuum; the Bryant—an ammonia-water system — operates at positive pressures. The control of refrigerant flow is accomplished very differently than in compression systems, and the normal refrigeration man must learn several new techniques to work on these units. Most servicemen with experience, however, agree that the complexity of absorption unit servicing is no more than with compression units.

York Researching, But Not Producing Gas Air Conditioning

YORK, Pa.—Through its own research and engineering laboratories and those of the Borg-Warner Research Center in Des Plaines, Ill., York Div. is continuing research and exploratory work on small size gas air conditioning, the company told the NEWS. "This research covers the entire field of our present systems as well as some that may be considered essentially air conditioning of the future."

While others have stated at several times that York is ready to market small tonnage gas engine-driven heat pumps, such is not the case—at least for the present—the company holds.

At the recent Southwest Exposition in Dallas, York displayed a 7½-ton absorption unit which it had used in conducting research on its large tonnage absorption systems. The company has received a "steady stream" of inquiries about the unit's potential application to residential use.

However, "construction of this particular unit would be far too expensive to make it feasible for residential use under today's market conditions," York concludes.

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President, Kal, Ehrlich & Merrick
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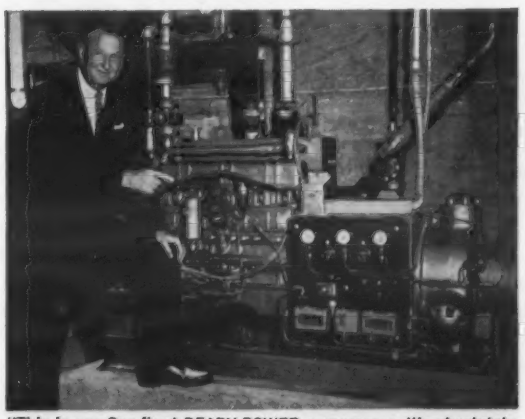

"This is our Gas-fired READY-POWER compressor. It's absolutely care-free and as thrifty to operate as we could wish."

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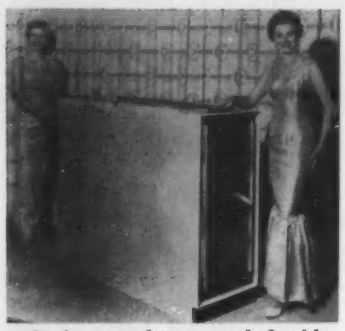
Low-Boy Furnace Matches Modern Decor



● A new, lower, and freshly-styled gas-fired furnace has been announced by the Airtemp Div., Chrysler Corp., Dept. AH&RN, P. O. Box 1037, Dayton 1.

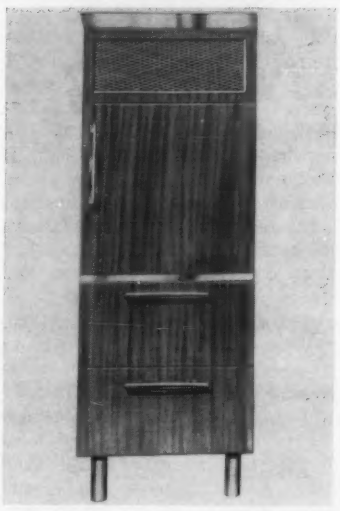
The Lo-Boy furnace has been designed to match the decor of modern basements which are used as recreation rooms. The Lo-Boy will be available in three models, with 100,000, 125,000, and 150,000 B.t.u. The model numbers are 4110-01, 4113-01, and 4115-01. The furnace stands only 45 in. high and is designed for easy installation—in less than 9 sq. ft.—with Chrysler's five-stage air conditioning, Airtemp said, adding:

"It is one of the few furnaces on the market which conceals within the unit any addition of the electrostatic filter cells, an activated charcoal filter, and a bacterialamp."

Chrysler's cooling coil, in matching styling and color, may be added atop the Lo-Boy to provide central air conditioning. The cooling coil fits flush with the furnace.

"This furnace has Chrysler's exclusive 'Contour Flame' burner, which keeps the flame hugging the whole lower part of the heat exchanger for more efficient heating and protects the slotted gas ports from clogging with falling dirt and scale," the announcement stated. "A corrugated heat exchanger assures faster heat transfer and the metal contracts and expands without banging."

Furniture-Like Food Service Series Bowed



● "2 in 1" freezer-refrigerator combinations in "Precedent Series" styling are being offered for the food service field by Leitner Equipment Co., Dept. AH&RN, 2535 North 25th Ave., Franklin Park, Ill.

The Precedent Series features decorator-like furniture decor. This dual control serving unit is finished in "Formica" patterns and color tones or in stainless steel. The combinations are engineered to maintain 0 to 5° temperatures in the freezer section and proper serving temperatures in the refrigerator compartment, the company said.

Other features include space for storage of 12 by 20-in. pans; one-piece, die-formed "Leitnerite" door frames and backs; large, removable, Leitnerite drawers; and adjustable shelving. The units are available with drawers on full extension slides in the refrigerator section.

Operators will have a choice of remote or self-contained models. The latter feature top-mounted compressors and 8-in. legs, according to Leitner.

Ice Cube Maker Available for Home

● What is billed as "a new, lower cost way to constant supply of ice cubes" is offered by the "RCA Whirlpool" ice cube maker recently introduced by Whirlpool Corp., Dept. AH&RN, St. Joseph, Mich.

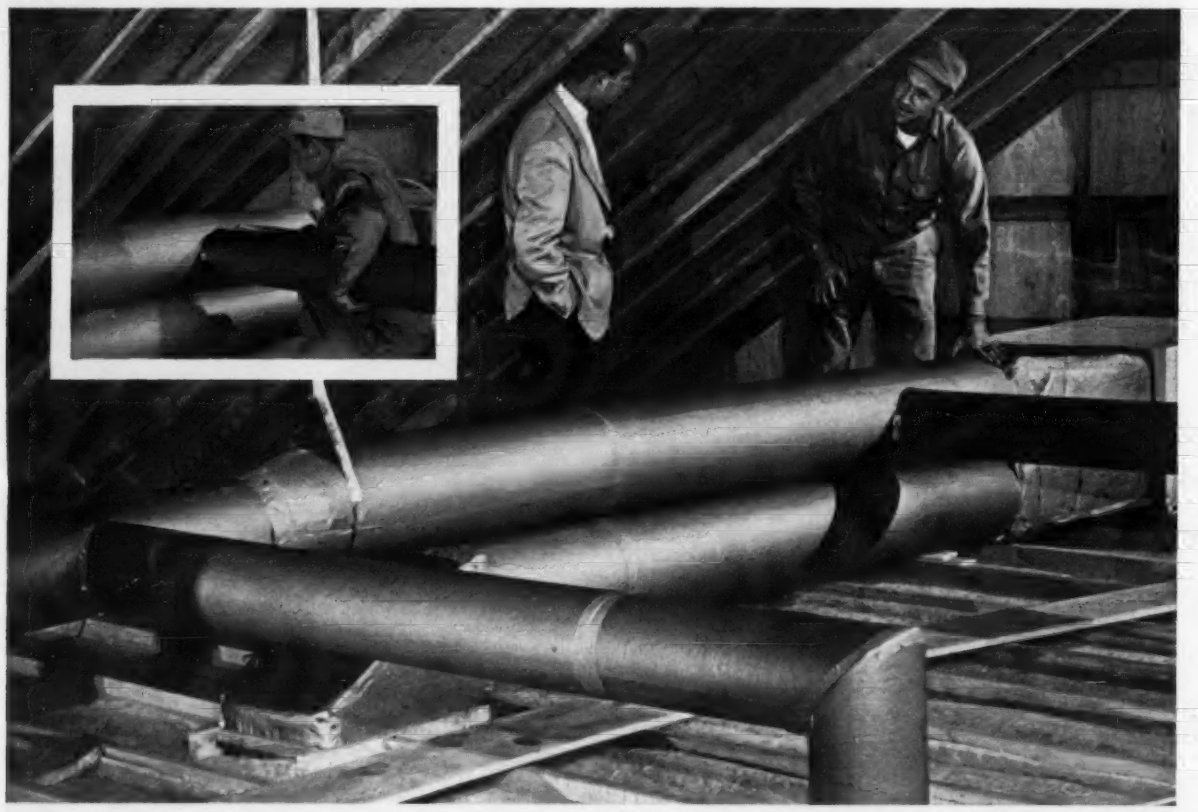
"Only 16 in. wide, the unit produces up to 35 lbs. of ice per day, approximately 1,840 cubes," the company said. "As cubes are used, a thermostatic device senses the need to replenish the supply.

"A storage bin holds 16 lbs. of ice cubes always ready for use. Automatically regulated by demand, the unit produces more ice in a solid sheet by directing a flow of cold water over an inclined freezing plate. Since the ice cube maker actually freezes running water, the cubes turned out by the new appliance are crystal clear.

"When the water freezes to appropriate thickness, the freezing plate is heated so that the slab slides down the incline onto a grid of crossed wires. Wires are spaced in 1¼ in. squares.

"To form cubes, the unit sends electrical current through the wires in the grid; the slab of ice quickly melts through the heated wires, and slender ice cubes fall into the stainless steel storage bin.

"The unit is available in both free standing and undercounter models."



Warm air contractor gets cooling job in wet heat building... AND SAVES 20%!

Who says that opportunities and profits for the warm air heating contractor are gone when a building is sold on some type of "wet heat"? Certainly not the warm air contractors who are getting cooling jobs by bidding G-B DUCT—the round, prefabricated glass fiber duct. Where no warm air ducts exist, G-B DUCT can be simply and economically installed in attics and crawl spaces—a real "job getter" and a real profit-maker!

Take for example, the experience of Robert Mattingly, Chicago air conditioning contractor, who installed air conditioning in the hot-water-heated Graystone Floral Shop. Because the installation crew was able to install a complete G-B DUCT system in this 26′ x 96′ structure in just one day, Mattingly reports he saved 20%, and he plans to use G-B DUCT on all future jobs of this type.

G-B DUCT comes in 6′ ready-to-use sections that can be cleanly and easily cut and fitted right on the job—there is no costly in-the-shop preassembly. Available in standard sizes up to 18″ diameter, G-B DUCT fits snugly and permanently together with standard metal sleeves and vapor barrier tape. Elbows and T fittings are also easily fabricated with a knife and factory-supplied templates.

Made entirely of glass fiber insulation encased in an airtight vapor barrier sleeve, G-B DUCT provides maximum thermal and acoustical efficiency, as well as positive protection against sweating and moisture build-up. In fact, the operater of the floral shop reports that during the cooling season the average electric bill was only $50, of which only $15 was estimated to be for air conditioning—substantially less than had been anticipated.

For profitable, efficient results on your next air conditioning job in a "wet heat" building, use G-B DUCT. Write today for product information.

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Merchandiser Can Be Used for Check-Out

● A new line of self-contained retail merchandising coolers are now available from Beverage-Air Sales Co., Dept. AH&RN, P. O. Box 1981, Spartanburg, S. C.

The new coolers feature "forced air cooling" and are available with either large glass display front with transparent sliding lids or with solid front and stainless steel slide lids.

The stainless steel rear shelf can be used for a check-out counter or for displaying allied products. The stainless steel top rail and front ribbon trims protects cabinet finish where heavy usage is required, it was stated. All glass front models have fluorescent lighting. Coolers are equipped with condensate disposal pans.

Coolers are available in two sizes, 34 in. or 49 in. models with capacities from 84 to 132½ gal. gabled cartons.

1½-Hp. Compressor Weighs Only 47 Lbs.

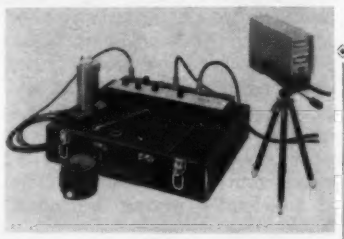
● A new 1½-hp. hermetic compressor weighing only 47 lbs. has been announced by York Div. of Borg-Warner Corp., Dept. AHRN, York, Pa.

Said to be particularly adaptable for room and residential air conditioning, this new lightweight compressor, model F-2556, is only 11⅞ in. high, 10^{13}⁄$_{32}$ in. wide, and 8½ in. deep, it was stressed. Capacity of the new compressor at normal rating condition is 16,300 B.t.u.h.

The compressor can be furnished for either 230/60/1 or 208/60/1 service. It is available with two styles of mounting legs and with either top or side suction inlet. It also features an internal resilient mount and external mounts of either rubber cushions or springs to keep operating sound to a minimum, according to the manufacturer.

Portable Balancer Adjusts Over Wide Range

● A new, precision, portable balancer, designed for ease of operation, sensitivity, and vibration analysis of all types of assembled machinery to cut maintenance and increase quality of production, has been announced by Stewart-Warner Corp., Dept. AH&RN, 1826 Diversey Pkwy., Chicago 14.



The instrument is adjustable to any job from below 10 millionths of an inch to over ⅒ to ⅛ in. amplitude of vibration, according to the company.

"In operation, the amplitude of vibrations of the part under test are electromagnetically converted into electrical impulses by the vibration pickup unit," it was explained. "These impulses are then amplified in the electronic unit which triggers a strobe light to 'freeze' the image of the rotating part, pin-pointing the trouble source. The angle of unbalance is indicated through the stroboscope and the amount of vibration appears on an easy-to-read meter."

The portable balancer, model 2390, consists of strobe and meter head, electronic unit, vibration pickup, pickup extension cable, tripod, spare electronic tubes, shoulder strap, and carrying case. The unit operates on 115 volt, 60-cycle, single-phase current and lists at $1,195.

Hot Water Circulator Is Water Lubricated

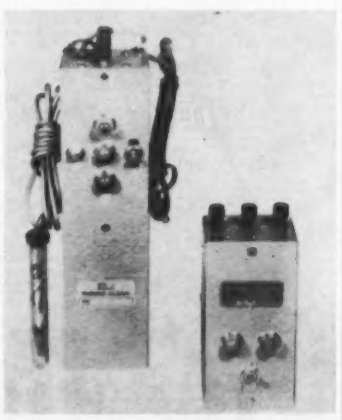
● Newest addition to the "Perfecta" line of hot water circulators, model 152, has been announced by Taco Heaters, Inc., Dept. AH&RN, 1160 Cranston St., Cranston, R. I.

The company said model 152 is water lubricated, requires less power, and has "no seals to leak, wear, or create extra friction," and no drive couplings. Impeller, rotor, and shaft (the only moving parts) are assembled as a single unit.

Described as ideal for the average residence, particularly for secondary pumping, model 152 "mounts easily in spaces where many conventional circulators cannot be installed," and is suitable for packaged boiler units," according to the company. It is available with ¾, 1, and 1¼ in. interchangeable flanges.

Self-Contained Alarm Is Easily Installed

● A self-contained, "easily installed" electric alarm system with auxiliary battery power is available from Mack Electric Devices, Inc., Dept. AH&RN, Wyncote, Pa.



The device uses a factory-preset, tamperproof mercurial thermostat as the sensing element and gives audible and visible warning of unsafe temperature in refrigerators, freezers, blood banks, laboratories, and other applications where temperature maintenance is critical, according to the company.

The unit plugs into any 115-volt, a.c. circuit and mounts with a single screw. A green light shows safe temperature, and red light indicates unsafe low temperature. The warning buzzer can be silenced by flipping the toggle switch but warning light stays on.

If electricity should fail, a dim amber light and audible signal warn immediately of power failure through the 6-volt battery. Battery effectiveness can be checked by a pushbutton which simulates power failure. A remote signal box is optional equipment.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

More details on the products described on these pages may be obtained by writing the manufacturer at the address given in each story.

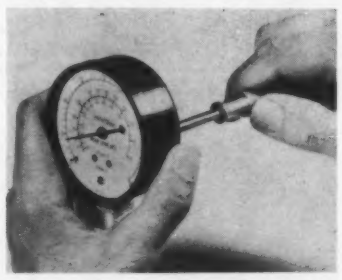
Water Valves Offered In Larger Sizes

● Penn's Series 246 water regulating valves are now available in all-range (R-12 and R-22) construction in larger sizes, it was announced by Penn Controls, Inc., Dept. AH&RN, Goshen, Ind.

The new sizes are 1, 1¼, and 1½ in. Previously all-range valves were manufactured in ⅜, ½, and ¾-in. sizes only.

Also available in Series 247 (reverse action) are valves designated as "LR" construction. "LR" or low range valves are now manufactured in ⅜ through 1½ in. sizes. They are used primarily on heat pump applications to modulate the water to the heat source exchanger.

Quick Turn of Screwdriver Recalibrates Gauge



● A quick turn of a screwdriver recalibrates its new refrigeration gauge with external zero set, according to United States Gauge Div., American Machine & Metals, Inc., Dept. AH&RN, Sellersville, Pa.

This specially designed gauge will serve as a basic test instrument for refrigerator service work, it was stated.

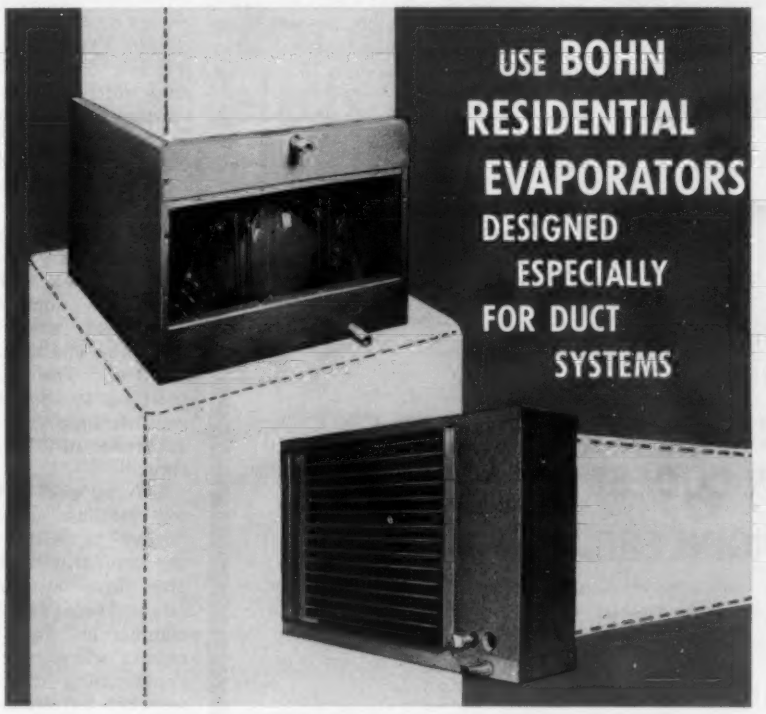
"USG's 'Frostline refrigerator gauges' are particularly desirable where rugged construction is needed to withstand occasional over-pressures, sharp blows, and falls," the announcement pointed out.

"Such mishaps may result in a gauge showing an off zero reading, when not in use, and a corresponding error when being used for testing.

"To restore indicating accuracy, the gauge has USG's unique Zero-set device for resetting the pointer at zero, correcting up to 30% of scale.

"The recalibration can be easily accomplished with a screwdriver, from the back of the gauge, without removing gauge ring or crystal."

The gauge is available in two models, 1780 and 1785. Model 1780 has a phosphor bronze bourdon tube; model 1785 has a beryllium-copper bourdon tube. Range of model 1780 is 0 to 400 p.s.i. with scale graduations in units of 10 lb. Range of model 1785 is 30 in. 0-60-250 p.s.i. (Overpressure protection from 60 to 250 p.s.i.)



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BAV unit for vertical installations

Same unit mounts *above* or *below* furnace. Two galvanized steel drain pans permit mounting in "A" or "V" position.

BH unit for horizontal installations

Can be installed with air flow *in either* direction; all sizes have duct flanges on both sides. Double drain pan with 1" insulation prevents sweating.

Both models give you . . .

- Five sizes to match condensing units of 2, 3, 4, 5 and 7½ hp.
- Bonderized steel cabinets with grey hammertone enamel finish . . . fully insulated
- Circuiting suitable for R-12 or R-22
- Large access panels
- Ample space inside for expansion valve
- UL listed

Ideal for either new or existing residential systems.

BOHN *Buy the known line . . . the BOHN line*
ALUMINUM & BRASS CORPORATION
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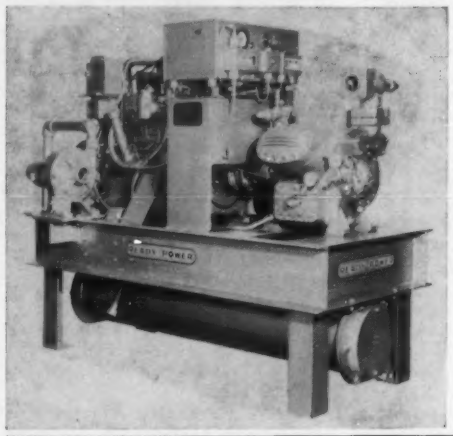
The Ready Power Story

Manufacturer of Gas Engine-Driven Compression Systems Has Sold 3,000 for Commercial, Industrial Uses

While Ready-Power Co., Detroit, is not active in residential air conditioning, the company is considered the leader in the application of engine-driven compression systems to commercial and industrial jobs. Ready-Power's experience with this type of gas air conditioning is studied by all those interested in applying engine-driven equipment to smaller jobs.

●



A TYPICAL gas engine-driven compression system manufactured by Ready-Power Co., Detroit. Model C22ST6C.

DETROIT — Low operating cost and continuous capacity control are the two outstanding advantages of gas engine-driven compression systems, according to Norbert K. Hall, manager of air conditioning and refrigeration division, Ready-Power Co. "In the smaller sizes, these operating costs mean savings of hundreds of dollars a year over electrically driven compression systems; in the larger sizes, the savings are in the thousands of dollars," Hall claims.

"The combination of cylinder unloading and variable speed gas engine means smooth, continuous capacity control down as low as 5 tons on a 76-ton unit, say."

Pushing these and other advantages, Ready-Power has become the leading supplier of gas engine-driven compression systems from 20 to 100 tons. Apparently resisting some outside pressure to enter the residential market, the company will produce units with as low as 15-ton ratings for certain applications.

First cost of Ready-Power's engine-driven compression systems is directly competitive with electrically driven equipment in the larger tonnages, the company claims. The smaller the tonnage, the more spread between the competing types of equipment, with the gas units becoming the more expensive of the two. The company's sales policy is to show that operating cost savings can amortize this difference in first cost in a short time.

Having sold over 3,000 units for civilian applications, and "many" to military installations, the company finds that geography plays no role in its sales, largely because its sales are to commercial and industrial accounts where the need for air conditioning is determined not so much by climate as by internal heat loads.

While a couple of utilities have told the NEWS that Ready-Power has asked for "disproportionate amounts of help," from them, the company's stated position is that its effort towards utilities has been chiefly an attempt to convince them to offer attractive summer rates for fuel, because of the profitable load offered by gas air conditioning.

The company points to its method of distribution—largely by direct factory representation—to refute statements that it is "leaning on the utilities."

Ready-Power uses Continental engines on its larger equipment, International Harvester engines on the smaller units. The company is credited with a large part in the AGA-sponsored development of the now well known Continental Long Life Engine. "An engine is sized to accommodate the horsepower requirement of the compressor plus any power take-off for a cooling tower pump," says Hall.

"To be competitive, the industry must use a standard type engine which is mass produced, has readily available service parts, and is reasonably priced," he adds. He emphasizes that the gas engines applied to air conditioning are not "like your automobile engine. They are intermediate-speed, industrial work-type engines which can go much longer than automotive type engines without attention or major service."

Hall points out that since the fuel is injected in vapor phase, there is no blow back to the lubrication system of liquid dilutants which can alter the characteristics of the oil, can cause carbonization, acid formation, and sludge. The company points to several units which have run as long as 19,000 hours without having the head removed.

Ready-Power offers a warranty which covers the engine-compressor unit for 1,500 hours of operation or one year, whichever comes first. The company limits its obligation to the replacement of parts considered by it not to conform to warranty.

Ready-Power uses Carrier and Airtemp compressors. According to Hall, "We frequently obtain a greater life on compressors than these same pumps give on competitively driven equipment." He reasons that, since the gas engine system starts up with only one cylinder loaded and takes some two minutes to get to full load—"giving the remote bulb time to take control"—there is almost no slugging and a very low impact loading on the compressor.

Discussing service, Hall cites figures which show that 10-15-20% of service calls are on the engine. "The remaining 80% or so are devoted to compressor, air handling, refrigerant cycle—the types of problems which exist regardless of the prime mover." (Servicing of engine-driven air conditioners is discussed in another article.)

The close capacity control claimed for the engine-driven units is made possible by a servo-type motor-driven governor control linkage and compressor unloading linkage. The servo motor is actuated by a sensing element which monitors the changes in suction pressure caused by any changes in load across the evaporator coils. The control system is such that as the load drops, the governor lowers the engine speed; when the engine has dropped to its lowest operating speed and the load continues to drop, the cylinders begin unloading, one at a time.

Ready-Power claims that humidity control attainable with this type of capacity modulation is far superior to that obtained with on-off type air conditioning systems.

* * *

Ready-Power Co.

Equipment: Engine-driven compression systems
Package chillers

Capacities: 20 through 100 tons for single units
No limit in multiple units.

Gas Consumption: 13 cu. ft./ton/hr.

Sales-to-date: Over 3,000 civilian sales
"Many" to military

Gas Consumption Varies with Equipment

Gas consumption varies with the type of air conditioner. Gas industry sources supply these general figures:

Gas engine-driven units—13,000 B.t.u.h./ton.

Absorption units—24,700 to 27,500 B.t.u.h./ton.

Turbine-driven centrifugals—18,000 to 27,000 B.t.u.h./ton.

A report issued by the Air Conditioning & Heating Committee of AGA lists these consumptions for specific units—consumption in thousands B.t.u.h./ton.

Arkla All-Year units—23.

Large tonnage absorption units—27.

Large turbine-driven units—21.

Weatherbuster (engine-driven)—20.

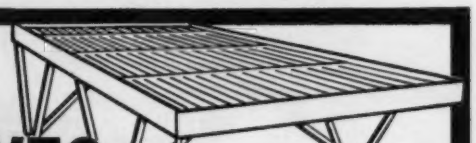
Ready-Power (engine-driven)—13.

Arkla 25-ton water chiller—27.

Interested In All-Year Gas Air Conditioning?

You can have it delivered to your home for as little as $1,318. If you buy it on the employe purchase plan, this will cost you $38.42 a month for 36 months. The above purchase price includes a 3-ton unit, with evaporative water cooler. It does not include the cost and financing of whatever ductwork is necessary.

(Taken from a utility house organ.)



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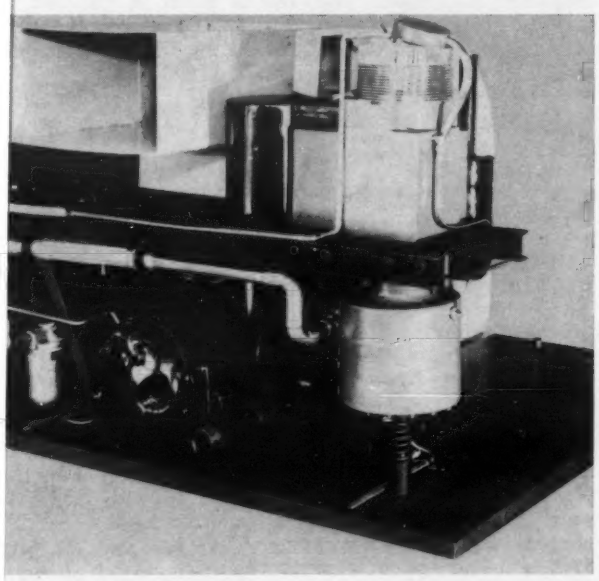
SEE PAGE 22

Free Piston Compressor?

YES: Robertshaw-Fulton Predicts Progress



N AIR CONDITIONER—This 3-ton condensing unit is a prototype making free-piston compressor developed by Battelle Memorial Institute, Columand now being further developed by Robertshaw-Fulton Controls Co.

RICHMOND, Va. — Robertshaw-Fulton Controls Co., which has taken on the further improvement and commercialization of the free-piston compressor developed by Battelle Memorial Institute, Columbus, Ohio, plans to conduct extensive controlled testing of six prototype air conditioning systems, according to A. W. Beck, vice president.

"During 1960, these tests will cover every technical aspect of the systems. We will use analogue computers and other devices to test every portion of the free-piston gas engine so that we will be sure of our ground when we go into our pilot run in 1961," Beck said.

In 1961, the company hopes to have from 50 to 100 units in a controlled field test. As has been the case with other manufacturers, Robertshaw-Fulton will work closely with gas utilities who will supply service and testing help to the company's own engineers.

As discussed in this week's Techcenter, improvements are steadily being made on the free-piston compressor—so much so that Beck refers to "minor bugs" which they are removing now.

It is the company's intention to sell the free-piston compressor only to original manufacturers of air conditioning equipment, and it is expected that the unit will be available for 3 and 6-ton central residential units. There has been mention of the possibility of a smaller unit for automobiles.

NO: Manufacturer Doubts Practicality

This statement was obtained by the NEWS from a major manufacturer who studied the free-piston compressor and decided against acquiring it for further development.

Our company reviewed the free-piston compressor from three points of view before turning it down. We wanted to know if it could be manufactured competitively with the present-day hermetic compressor. We wanted to know if operating costs would be favorable in all parts of the country. This question, of course, included maintenance costs. We also wanted to determine if we felt the idea could be successfully developed to a stage suitable for production.

In answer to question No. 1, it appeared doubtful that the free-piston compressor could be manufactured competitively with hermetic compressors. In answer to question No. 2, it appeared that operating costs relating to fuel only would be less than hermetic compressors except for certain parts of the country. It did appear, however, that maintenance costs would be substantially higher. In answer to question No. 3, we did not come to a conclusive stage, however, we did uncover the necessity for numerous controls which made us extremely skeptical as to whether the free-piston compressor could be successfully developed.

Whirlpool To Develop Absorption Unit

ST. JOSEPH, Mich. — Whirlpool Corp. has decided that an ammonia-water absorption system "offers the greatest potential to this company's proposed entry into the gas air conditioning picture."

A research program now in progress is advancing on schedule, executives told the NEWS, and it is planned to carry out a few field tests this summer. A full scale field test based on limited production operations will be initiated in the summer of 1961.

Whirlpool's decision to go with the ammonia absorption system came after a long and comprehensive study of all existing and theoretical approaches to the general subject of gas air conditioning. "The ammonia system should have the most application to home air conditioning needs, and it is considered well suited to high production at a reasonably competitive cost."

One Whirlpool source predicted that a year-round heating-cooling system, located outside the house, is a "distinct possibility."

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

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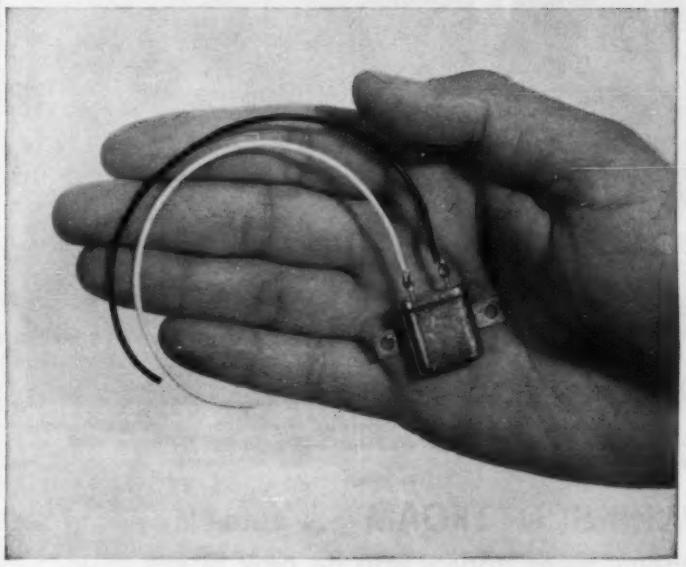
New electronic "watchman" detects freezer breakdowns...



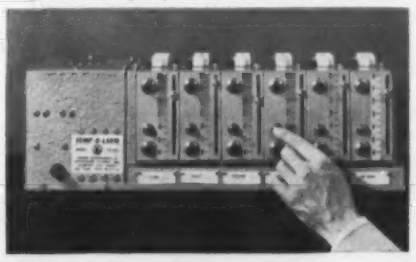
Opens up a golden sales opportunity for you!

Now – thanks to Kidde's new Temp-O-Larm, every supermarket, dairy, freezer plant is a gold-mine of potential profit! Frozen food spoilage due to freezer failures runs into millions of dollars annually, is a constant concern to store managers and owners. They will listen to your story on sure, dependable protection against spoilage that costs them only a modest amount per freezer unit – and *you* will net an attractive profit for every one of these installations!

Developed by Kidde Ultrasonic & Detection Alarms, Inc., the Temp-O-Larm system takes up little space, is easily installed, requires little or no maintenance. A tiny detector, pre-set for a specific temperature, is placed in each freezer or locker. Any abnormal temperature rise triggers the system, sounds an alarm locally or at central alarm company, points out the trouble spot immediately. Alarm time delay (0-6 hours) prevents false alarms during *normal* defrost or loading periods.

Temp-O-Larm is being promoted by national trade advertising and publicity, and special dealer sales aids are available. Most important of all, Temp-O-Larm bears the name of Kidde – most respected name in the alarm business.

For more information on Temp-O-Larm, and how it can bring in profits for you, write to Kidde Ultrasonic & Detection Alarms, Inc.



Annunciator in store signals dangerous temperatures immediately. Unit shown guards six refrigerated boxes. Lights indicate normal and alarm conditions. Unit has alarm time delay controls, alarm reset buttons.

Kidde

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595 Brighton Road, Clifton, N. J.
A Subsidiary of Walter Kidde & Company, Inc., Belleville 9, N. J.

TECH CENTER

by Frank J. Versagi, Technical Editor

Gas Air Conditioning: *State of the Art*

Gas may serve as the power behind a refrigeration cycle either directly or indirectly. In absorption equipment, for example, the system may be directly gas-fired, with the burner applied to a generator; or the gas may be used to generate steam or hot water which in turn activates the generator of the absorption unit.

Gas-operated air conditioning systems are available in capacities from 3 to over 3,000 tons; absorption equipment will handle loads from 3 to over 700 tons; gas engine-driven compression systems are applied to loads of 3 to 100 tons; and steam turbine-driven compression systems from 100 to 3,000 tons.

Equipment for larger commercial and industrial applications has been available for many years, but with the exception of limited activity by the old Servel group, no manufacturers were significantly reaching the residential and small commercial market.

In 1954, a gas industry task group had two research organizations conduct a study to determine the best approaches to reach the small tonnage markets. While several lines of attack were suggested, it was thought that the use of internal combustion engines to drive conventional compression refrigeration cycles offered the most quickly effective weapon with which to compete with electrical air conditioners.

Difficulties Experienced With Engine/Compressor

Everything went wrong with the first extensive attempt to market 3 and 5-ton engine-driven units. Compressor innards scrambled, engines seized, couplings broke, performance was far below original expectations. Even though today's engine-driven units perform more efficiently and reliably, the onus of that first mass failure mars the image of small tonnage engine air conditioners.

The supplier of the compressor for that first unit complains that the engine maker, and the industry in general, "were forever asking for changes in the **compressor** and were making no attempt to adapt the **engine** to air conditioning."

Today, AGA is sponsoring several research projects with the goal of developing long-life engines for use with air conditioners—research which has already resulted in the Continental engine being used by many gas unit manufacturers. "Yet," complains one AGA executive, "it strikes me that we would do better to design an engine with air conditioning in mind from the start, rather than continuing the attempts to adapt existing industrial engines."

Problems peculiar to gas engine-driven compressors are the handling of the great torque on the coupling when the unit starts up; the collection of refrigerant in the engine crankcase and the subsequent flushing out of all oil on startup, with a resulting engine seizure before the refrigerant can travel through the system piping and return; the need for inspection of oil, spark plugs, ignition points, engine cooling water; the need for exhaust control, mufflers; the greater or, at least, "different" sound level of an engine-driven condensing unit.

Advantages of Gas Engines

Countering these negative factors, gas engine-driven compression systems offer capacity control by varying the speed of the engine even though the compressor has fixed capacity; startup with the compressor 100% unloaded, resulting in a much lower impact loading on valve plate; undeniably lower operating costs than electrical units in most areas of the country; application without the necessity for increased electrical service to the structure.

In the larger tonnages, Ready-Power has been able to overcome many of the inherent disadvantages of engine-driven units, but the cost of so doing precludes application of the same techniques on smaller tonnage equipment. Many in the industry consider it significant that Ready-Power, undisputed leader in engine-driven air conditioning, has continually resisted pressure upon the company to market a residential size unit.

The lower operating costs are a strong selling point where the unit is run 2-3,000 hours a year, but the same argument cannot overcome objections to higher first cost if the unit will only be used a few hundred hours.

If manufacturers of engine-driven air conditioners can lick the high-service characteristic of their equipment and really reach the "one service call a year" they are aiming for, the next logical step is a heat pump, already being tested in several tonnage ranges by important manufacturers. The gas engine heat pump will operate on reverse cycle as does the electric heat pump, but all supplemental heat is supplied by engine and exhaust heat. No strip heaters are needed; no defrost cycle is called for.

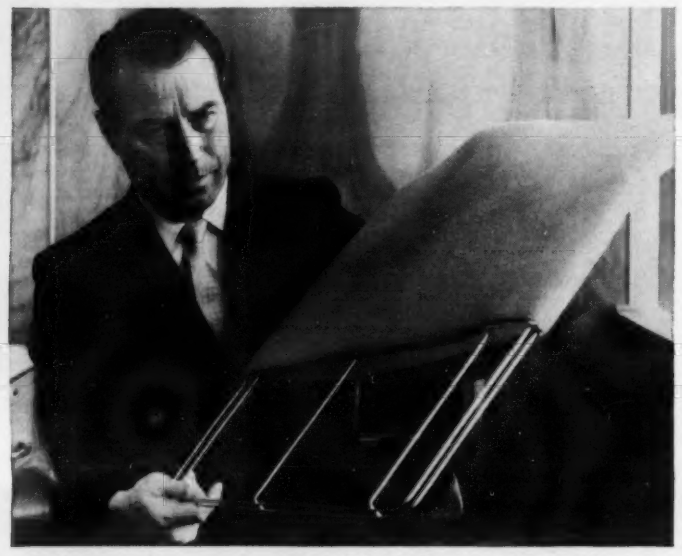
* * *

The Arkla and Bryant absorption units have taken a commanding lead in supplying small tonnage air conditioning, in spite of the fact that they normally cost more to operate than engine-driven equipment. There is no question but that the chief reason for this is reliability; both manufacturers' units, the NEWS has found, are performing as promised and require no unusual amount of service. (Operational data on the Arkla unit is given in the Dec. 14, 1959 Techcenter, on the Bryant unit in the Sept. 28 and Oct. 4, 1959 Techcenters.)

The absorption units both suffer from a general unfamiliarity in the field with the techniques of servicing, but the situation is being handled adequately for the present. A more restrictive factor on the Arkla unit is that it is water cooled. Many sources told the NEWS that most service and installation problems with this unit are with its accompanying evaporative cooler. Several installers insist that, at maximum load, the Arkla-recommended cooling towers are inadequately sized, and that they have had to be replaced with larger towers of another make.

Arkla's unit, of course, is a year-round unit; it supplies cooling in summer and heating in winter—the heating is obtained essentially by shutting off the condensing water. A major disadvantage of the unit, however, is its size. It is much larger than competitively sized electrical equipment, so much so that there have been frequent occasions where it was impossible to get the unit into existing structures without major alteration in entranceways. Even the newly developed remote Arkla unit is very large by comparison to conventional air conditioners.

Bryant's unit is an add-on chiller, and as such it takes no



"ScottFoam is very easy to fabricate," states Mr. Perlman. "In fashioning this pouch-like filter, we first cut the rolls of ScottFoam with a hot wire to required sizes . . . and then heat-seal or sew."

With SCOTTFOAM* . . . Auto-Flo builds sales appeal into its new filters

"Whether you're a filter distributor or a manufacturer of air handling equipment, you will like the way this filter performs," says Milton Perlman, President of Auto-Flo Corporation, Detroit, Michigan. "And ScottFoam is one big reason for its success.

"Here are three benefits which make this one of the most merchandisable filters on the market:

"RE-USABLE — It's easy to clean ScottFoam filter media. All the housewife has to do is remove the filter from her unit, wash and replace it.

"VIBRATION-FREE — There's no contact between the filter frame and the unit itself. Two sheets of ScottFoam are sewn together like a pouch with a zipper on one side. A metal frame is then placed *inside*.

"NO AIR LEAKAGE — Because of ScottFoam's unique pore arrangement, there is no strand displacement — this means no open channels developing like conventional filters."

You, too, can build sales-appeal into your air handling products by using long-lasting ScottFoam filters. To see how, write for your copy of the booklet, SCOTTFOAM FILTER MEDIA. It's yours free for the asking; just mail the coupon.

Send for this free booklet to see how long-lasting ScottFoam filters can be adapted to your products to give them added sales features.

Manager, Industrial Sales, Foam Division
Department B-2, Chester, Pa.

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*T.M. Patent Pend.

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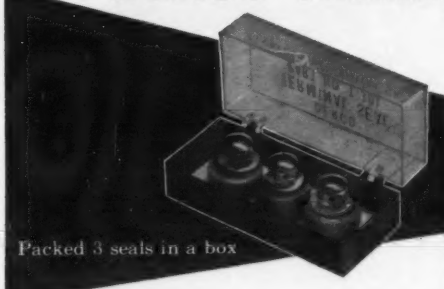
DERCO TERMINAL SEAL

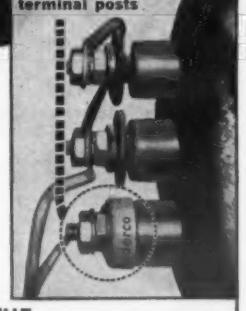
PART NO. T-301

U.S. Pat. Pend.



Packed 3 seals in a box

NOTE:
No increase in length of original terminal posts



Featuring:

- **LOW—LOW, PRICE**
- **DELRIN BODY* NOT AFFECTED BY TEMPERATURE CHANGES; CANNOT CRACK**
- **CANNOT SHORT OUT**
- **INSTALLED WITHOUT INCREASING THE LENGTH OF THE ORIGINAL TERMINAL POST**
- **PACKAGED IN REUSABLE HINGED PLASTIC CONTAINERS**

SEAL HERMETIC TERMINAL LEAKS on the job in 3 minutes instantly and permanently with the DERCO T-301, without opening the compressor. Simply install the DERCO SEAL over the existing post and the leak is sealed.

USE THE T-301 ON THE FOLLOWING UNITS:

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* New DuPont wonder plastic

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room inside the house, but it, too, is larger than electrical units of the same capacity.

This large size of absorption unit is probably inescapable. Since the several solutions in the refrigeration cycle move through the unit only by gravity and by pressure differential, minimum heights and distances must be maintained between components to assure this movement. The use of pumps has been suggested, but several parameters as corrosive resistivity, operating temperatures, pressures, electrical surges, make it unlikely that a pump can be developed soon which will match the long life requirements of an absorption unit.

(While the cycle is warranted for five years, absorption engineers confidently predict 15-20-year lifes for the smaller tonnage absorption units.)

Bryant's unit, an ammonia-water system, is air cooled. The Arkla unit, a lithium bromide-water system is water cooled. There is no doubt but that the development of an air-cooled lithium bromide system will add a valuable competitive weapon to the gas arsenal in the battle of the fuels.

Unlike either larger absorption equipment or engine-driven conditioners, the Arkla and Bryant units have no capacity control; they are on-off units.

What the Future Holds

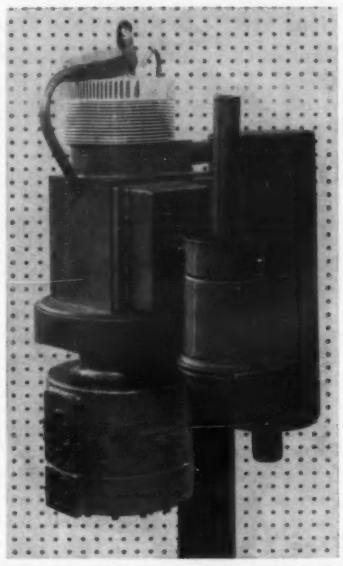
Under contract with the American Gas Association, Southwest Research Institute, San Antonio, Texas, is studying the feasibility of a double effect lithium bromide air conditioning unit, although its efforts are presently directed toward 20-ton range units.

Compared to a first-effect generator temperature of about 325° in a water-cooled unit, the temperature in the air-cooled generator is 374°. According to a research report, the higher temperature creates two problems: a need for stronger solutions which crowd crystallization concentrations and temperatures; increased corrosion, since corrosion is always accelerated at higher temperatures.

More heat transfer surface is required than would be the case with water cooling. Solution pumps will need to be developed to withstand temperatures and corrosion and remain leak-proof for a desired 10,000 hours.

Southwest Research Institute hopes to have a full size unit ready for a test run by late summer.

A double-effect, or two-stage,



EXTERIOR view of free-piston compressor.

absorption unit has several advantages — higher efficiency, automatic self-purging, and the possibility of operating air cooled.

* * *

Other developments under AGA's PAR-sponsored research:

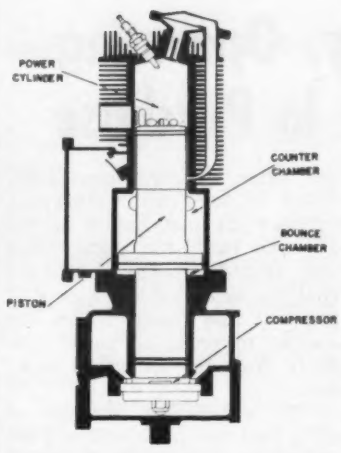
The development of a prototype adsorption unit—work now being conducted by A. O. Smith Corp. Cooling and dehumidification is effected by controlled wetting and drying of air stream.

A new 5-ton engine-compressor unit developed by D. W. Onan. Production models will be field tested this summer.

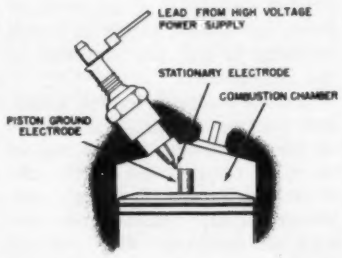
Work is commencing on a small gas turbine—35 to 50-ton range—to determine feasibility for commercial gas air conditioning.

Several projects are devoted to basic studies of such things as themodynamics of multi-fluid absorption systems, thermoelectric refrigeration, jet compression.

Many, even of those who are dubious about engine-driven equipment, feel that the free-piston compressor will supply the next practical units to compete with electric units. The



GENERAL structure of the free-piston compressor.



PROXIMITY firing eliminates need of timing device.

compressor, developed by Battelle Memorial Institute and now being prototyped by Robertshaw-Fulton Controls Co., has been described in the NEWS and other periodicals. Essentially, it consists of a piston with no mechanical connections, such as crankcase and rods. The natural gas fires in one end of the cylinder; refrigerant is compressed in the other end.

At the very beginning, there was much skepticism about the potential of this unit. There were three problems, in particular, which many felt were insurmountable; 1) leakage around the seal separating the gas side from the refrigerant side of the compressor; 2) starting—the original unit needed an electric refrigeration compressor to evacuate the refrigerant side of the free piston before the unit could start; 3) the need for a timing mechanism.

While there is still some leakage, sealing has been improved to the point that proponents have no fear that this aspect of the unit will be a liability in any sense. The refrigerant compressor used to evacuate the cylinder has been replaced by a mechanical starting device. Proximity firing of the unit's spark plug by a boss on the piston has eliminated the need for timing.

As reported elsewhere in this issue, it is likely that prototype free-piston air conditioners will be in the field within two years.

file guide—
AIR CONDITIONING: gas

Standards for Gas Air Conditioning

CLEVELAND — Standards "designed to assure safe and efficient performance and substantial and durable construction of equipment" already exist for gas-fired absorption air conditioners. Standards for engine-driven compressor systems are being developed, according to Frank Hogdgon, director of the American Gas Association's research laboratories here.

Approved by the American Standards Association is "Approval Requirements for Gas-Fired Absorption Summer Air Conditioning Appliances" which became effective July 1, 1959. The standard's numerical designation is Z21.40-1959.

The standard covers such items as accessibility for service, combustion air and ventilation, burners, pilots, motors, pumps, blowers. Section 1.2.6 states, "The manufacturers shall provide, with the appliance submitted for test, a family of curves indicating the cooling capacity of the unit under at least three conditions of operation in addition to those specified under 2.22, Cooling Capacity."

Section 2.22 defines the method for determining capacity of the unit, and the method is based upon ARI 250-58 for unitary heat operated air conditioning equipment.

While AGA standards have traditionally been limited to appliances to be used by residential consumers and other owners without access to trained help in determining the suitability or performance of equipment, the NEWS has learned that there is considerable pressure on AGA to broaden its scope in gas air conditioning to include larger equipment such as Arkla's 25-ton chillers and Ready-Power's commercial-sized engine-driven equipment.

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Installation Costs Vary Widely, Operating Costs May Be Deciding Factor In Purchase

In one New England city, a homeowner may purchase a 3½-ton Arkla absorption air conditioner, completely installed, for $1,595.

The cost for the same unit in one midwestern city is over $2,700.

A customer in one area of the country may purchase a Bryant gas air conditioner for $1,300; elsewhere he must pay $2,000.

This wide variation in installed cost of gas air conditioning is due to the variable effects in different cities of such factors as utility subsidization or not, the labor union situation, the use or not of a cooling tower, the inclusion of "minor" items like concrete slabs. As discussed in the article on merchandising, aggressive utilities may sell the units at cost in order to obtain the long-term revenue from the increased gas consumption. Less enthusiastic utilities may pay for shipping or for placement or for one phase of the installation—saving the consumer this expense. Reluctant utilities may subsidize not at all.

Labor costs vary widely, sometimes, but not always depending on whether the work is contracted through union shops.

Some items from around the country:

1. Total cost to customer is $1,595 for a 3½-ton Arkla. The unit costs $1,195; plumbing, wiring, sheet metal cost $500; an allowance of $100 is made for the old furnace. The total price allows for installation with a city water valve, but no evaporative cooling tower. "The supplier absorbs any small variations in cost due to lack of uniformity of application. All other installation quotations are arrived at by having the several trades bid on their respective portions of the work." (Editor's note: The source of these figures indicated that the installation costs are based on non-union work.)

2. "The average installation cost for Arkla units delivered to the basement and installed with a cooling tower, for material and labor, will run about $350. There is very little difference between the installation of the 3½ and the 5-ton units. This cost includes freight, delivery charges, plumbing and wiring of the unit and tower, where the cooling tower is no more than 30 ft. from the air conditioning unit.

"We charge an average of $3 a foot for installations running more than the 30-ft. maximum. Also, additional charges are made where there is necessity to run under a sidewalk or drive, or where there is extra handling to get the material in the basement.

"Freight and delivery, alone, will average $100. This is one of the problems confronting us in our competition with the electric air conditioning unit. We anticipate considerable savings in cost by the use of Arkla's new remote unit."

3. "An average 3½-ton job on our system runs about $2,150; an average 5-ton job goes for $2,750. Prices are somewhat lower when we make our own installations, somewhat higher in some of our territory."

4. "The estimated cost of installing a #500 Arkla and a TH10 cooling tower including contractor's mark-up, ductwork, grilles, labor, flue vents, plumbing, concrete base for cooling tower, electrical work, start-up and check-out, freight, and drayage, is $2,732 to $3,073. Including the same factors, the cost of installation of the Arkla #750 with its TH15 cooling tower is $3,783 to $4,050. If zone control is added, this means extra cost.

Installed Electrical Cooling System 10% Less

"You must remember that air conditioning systems can be installed for any price that the customer wants to pay; however, our prices are based on a quality job which will keep the home at 75° with an outside temperature of 95°. A comparable air-cooled electric installation will cost about 10% less."

NEWS field investigation showed that installed prices of the Bryant 3-ton add-on chiller are centering around $1,600, with extremes below $1,300 and above $2,000. One rumored installation cost of "over $6,000" was found to be a twin installation—two units complete with ductwork and zone control in a tri-level home. Total installation cost was $5,200. Since the unit is add-on, there normally is no ductwork cost.

A simple item like the concrete slab needed to mount Bryant's unit or Arkla's water tower can make a significant cost in first price. In one city, for example, a poured slab costs from $70 to $80. A pre-cast slab the same size may be obtained for under $20.

Generally Less Expensive To Cool with Gas

It can be seen that average installed costs for gas air conditioning are relatively higher than for electric air conditioning. Most gas people admit this and sell over the objection with the argument of low operating costs. While the situation varies about the country, it is correct to say that it is generally less expensive to cool with gas than with electricity. This comparison includes the electrical costs which accompany the use of a gas air conditioner.

However, for the residential consumer, the difference in first cost can only be amortized over a reasonable period if the cooling is needed over 2,000 hours a year. In west coast areas, where the unit will operate on cooling over 3,000 hours, operating cost savings may pay for the difference in first cost in a year or two. After that, the savings are all real. In such areas as Detroit and Cleveland, say, where 500 cooling hours are normal, the argument is not as effective, and many gas people told the NEWS that the gas industry must find a way to become more directly competitive on first costs, if it is to take more than its present small share of the central air conditioning market.

Commercial use of the smaller units, of course, lends itself well to the operating cost argument, since internal loads may well require operating time far in excess of residential requirements in the same climate.

One utility found that, on its lines, a Bryant 3-ton unit cost the customer some 3% more to operate than the 3½-ton Arkla, but that the Arkla unit brought the gas utility 55 cents from each consumer dollar, while the Bryant brought the utility 78 cents.

On heating, the NEWS found that the Arkla "Sun Valley" costs no more to operate than gas furnaces it replaced in many instances.

No reliable information was available on the installed and operating costs of residential-size gas engine-driven air conditioners, although Ready-Power shows figures which support its claim of about "one cent per ton per hour" operating cost.

Gas Air Conditioning Operating Cost Case History

Kansas City Mo. (1959) $1.25 first MCF—balance at .439/MCF

Unit	June	July	Aug.	Sept.
Arkla 500	$3.73	$12.28	$13.63	$15.88
Arkla 500	4.18	12.73	12.28	10.03
Arkla 500	8.68	16.78	21.98	15.44
Bryant 36-450	....	16.25	17.22	10.34

Room Units Offer No Market for Gas

Although the gas industry is making impressive gains in central residential air conditioning, there is no serious thought that gas room units will ever be developed.

None of the existing methods of cooling, absorption, engine-driven, adsorption, thermoelectric, lends itself—even in concept—to imagining a unit small and efficient enough to serve as a window unit or room cooler, and most spokesmen for gas interests write this off as an unattainable market.

"Central air conditioning represents one of the greatest untapped market potentials in America today," says one gas man, "but the small room air conditioner will be as outmoded as is the small room heater today."

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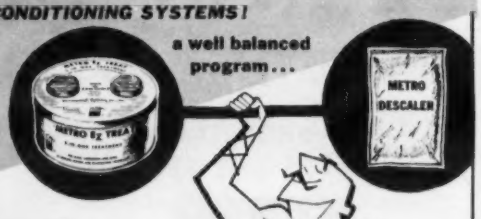

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SEE PAGE 22

ASHRAE Program--

(Continued from Page 1, Col. 5)

ing and Its Demands on Refrigerator Design" and "Effect of Air Conditioning In Food Stores on Open Display Cases."

Among special events planned for the gathering are an informal reception Sunday afternoon, June 12; the welcome luncheon on Monday at which new officers will be installed; a Gulf of Georgia cruise Monday evening; a golf tournament Tuesday; and banquet and dance Tuesday evening.

The technical program follows:

MONDAY, JUNE 13

8:30 a.m.—Registration.

9 a.m.—General assembly.

First Technical Session

9:30 a.m.—"A Gas-Fired Open Cycle Air Conditioner," B. E. Eakin, supervisor, reservoir engineering research, and R. T. Ellington, assistant research director, Institute of Gas Technology, Chicago.

10:15 a.m.—"An Air-Cooled Absorption Cycle," R. H. Merrick, chief engineer and R. A. English, senior development engineer, gas air conditioning, Bryant Mfg. Co.

11 a.m.—"Dual Solution System," F. H. Hibberd, Air Conditioning Development Co., Rye, N. Y.

11:45 a.m.—"Solar Heat Gains through Slat-Type, Between-Glass Shading Devices," N. Ozisik (formerly with ASHRAE Laboratory) and L. F. Schutrum, ASHRAE Laboratory.

Domestic Refrigerator Engineering Symposium

9:30 a.m.—**"Human Engineering and its Demands on Refrigerator Design."** Keynoter: Mrs. Glenna McGinnis, Food & Equipment Editor, "Woman's Day."

"Underwriters' Requirements for Refrigerators and Freezers," G. H. Pope, managing engineer, Casualty & Automotive Dept., Underwriters' Laboratories, Inc.

"Independent Testing Group's Evaluation of the Industry Products and their Impact on Design Trends," Consumers Union representative.

TUESDAY, JUNE 14

Second Technical Session

9:30 a.m.—"A Proposed Pipe Friction Chart for High Temperature Water Systems," Prof. T. C. Min, and Prof. P. J. Potter, formerly head, Dept. of Mechanical Engineering, Auburn university.

10:15 a.m.—"Reaction Forces in A Scotch Yoke," V. G. Foris and B. W. Hatten, Refrigeration-Freezer Engineering Dept., Westinghouse Electric Corp.

11 a.m.—"Electrical Analogy of Basement Heat Loss," J. M. Elliott, assistant professor, and Dr. Merl Baker, director, Kentucky Research Foundation, University of Kentucky.

11:45 a.m.—"Cooling Rates of Apples Packed in Different Bushel Containers and Stacked at Different Spacings in Cold Storage," D. V. Fisher, head, Pomology Section, Dept. of Agriculture, Summerland, B. C., Can.

Commercial Refrigeration Symposium

9:30 a.m.—**"Effect of Air Conditioning in Food Stores on Open Display Cases."**

"Effects of Air Conditioning on Condensing Unit Sizes for Open Display Equipment and the Air Conditioner Itself," D. E. Friedman, chief engineer, Hussmann Refrigerator Co.

"Air Conditioning in Food Stores and Its Effects on the Operation of Open Display Equipment," T. L. Tyler, production development engineer, Tyler Refrigeration Corp.

"Condensation In and On Open Display Equipment as Related to Air Conditioning vs. Non-Air Conditioned Stores," J. A. Biggers, director of engineering, Friedrich Refrigerators, Inc.

2 p.m.—**Forums**

1. "Cryogenics." Moderator: V. J. Johnson, chief, Gas Liquefaction Section, Cryogenics Engineering Laboratory, National Bureau of Standards.

2. "Corrosion with Window Air Conditioners." Moderator: C. O. Hutchinson, manager, industrial sales, The Glidden Co.

3. "Practical Applications of Foam Insulation." Moderator: V. L. Miller, assistant manager, Technical Services Dept., Pittsburgh Corning Corp.

4. "Economics of Electric Heating vs. Fossil Fuels for School Buildings." Moderator: Lincoln Bouillon, Bouillon, Griffith, Christofferson & Schairer, Seattle, Wash.

3:30 p.m.

5. "Aluminum Tube Refrigeration Coils." Moderator: O. J. Nussbaum, chief engineer, Kramer-Trenton Co.

6. "Reducing Power Needs for Hot Water Systems." Moderator: C. W. Pollock, manager, Air Conditioning & Refrigeration Div., Crane Co.

7. "Noise in Ventilating Systems." Moderator: J. B. Graham, director of research, Buffalo Forge Co.

WEDNESDAY, JUNE 15

Third Technical Session

9:30 a.m.—"Solubility of Refrigerants-11, 21, and 22, in Organic Solvents Containing an Oxygen Atom," Prof. L. F. Albright, assistant professor T. C. Doody, and Graduate Students P. C. Buclez and C. R. Pluche, School of Chemical Engineering, Purdue university.

10:15 a.m.—"Determination of Moisture in Fluorocarbons," J. D. Morton and L. K. Fuchs, Development Dept., Union Carbide Chemicals Co., Div. of Union Carbide Corp.

11 a.m.—"A Study of the Factors Influencing the Stability of the Mixtures of Refrigerant-22 and Refrigerating Oils," Dr. W. O. Walker, dean, Div. of Research and Industry, and Shelvin Rosen, Industrial Chemical Research Laboratory, University of Miami, and S. L. Levy, Research Laboratory, General Chemical Div., Allied Chemical Corp.

11:45 a.m.—"Time Factors in the Removal of Moisture from Refrigerating Systems with Desiccant-Type Driers," W. O. Krause, section head, Refrigeration Research; A. B. Guise, director, Development and Design, and E. A. Beacham, Refrigeration Sales Development, Ansul Chemical Corp.

Fourth Technical Session

9:30 a.m.—"Production Control Testing of Thermoelectric Materials," Dr. G. V. Downing, Jr., Physical and Inorganic Chemical Research, Merck, Sharp & Dohme Research Laboratories.

10:15 a.m.—"A Simplified Engineering Approach to Thermoelectric Heat Pumping," W. V. Huck, Applied Research Supervisor, Minnesota Mining & Mfg. Co.

11 a.m.—"A Comparative Study of the Manufacturing Costs of Thermoelectric and Mechanical Refrigerating Systems," D. W. Scofield, project engineer, Dr. P. F. Taylor, project scientist, and L. A. Staebler, manager, Advanced Development Dept., Philco Corp.

ARI Exposition--

(Continued from Page 1, Col. 4)

Other members of the Committee for the 12th Exposition of the industry are:

H. T. Jarvis

W. A. Siegfried, president of Superior Valve & Fittings Co., vice chairman; Sydney Anderson, Jr., manager of the Los Angeles branch, Airtemp Div., Chrysler Corp.; B. E. James, president, McQuay, Inc.; J. A. Mulcahey, vice president of sales, Dunham-Bush, Inc.; George A. Schnier, national sales manager, Refrigeration Dept., American Potash & Chemical Co.; and George Mills, ARI show director.

H. F. Spoehrer, vice president and treasurer of Sporlan Valve Co. and chairman of ARI's Show Policy Committee, and Rudy Berg, president of ARI and vice president of Copeland Refrigeration Corp., are ex officio members of the show committee, also.

The committee held its first meeting late in April in Los Angeles to lay initial plans for the show, and is expected to hold another meeting this summer.

Meanwhile, Show Director Mills has been authorized to begin promotion of the Exposition, now definitely scheduled at the Los Angeles site, and to start making the multiplicity of arrangements essential to a successful exposition, it was noted.

The 11th Exposition of ARI was held in Atlantic City in November of 1959, and the 10th at Chicago in November, 1957.

While a specific "theme" for the show has not been finally settled, it will stress the mushrooming importance of the West Coast market.

Gas Air Conditioning Expects To Capture 1 of 4 Sales--

(Continued from Page 1, Col. 5)

several hundred gas engine-driven air conditioners were installed around the country. Partly because the engine and compressor were rather hurriedly matched; partly because know-how was still small; and largely because too many units were installed out of reach of adequate service and maintenance, the units failed in great numbers.

While the specific unit involved in this unhappy experience is no longer being produced, other manufacturers, such as Comfortemp, ICED, and Weatherbuster, are working against the undesirable image created by these first well publicized failures.

Gas industry hopes for a heat pump ride strongest on the perfection of gas engine-driven equipment. Since the compression side of the system is a conventional refrigeration cycle, reverse cycle operation may be applied. All supplemental heat requirements are adequately met by engine and exhaust heat. A few engine-driven units have been tested as heat pumps, but none has been made generally available.

In spite of such hopes, many are of the opinion that gas engine units will never play an important role in residential and small commercial air conditioning—for reasons described elsewhere in this issue. It is considered significant that Ready-Power of Detroit, which is undisputed leader in engine-driven equipment from 20 to 100 tons, has so far resisted attempts to get it to produce residential units.

There is hope that the highly publicized free-piston compressor, just going into prototype condensing units, may provide the means by which to place engine-driven equipment in a favorable light.

'Birth of Gas Cooling'

The feeling is strong that absorption air conditioners will be the savior of the gas industry.

Friend and foe, alike, generally date the "birth" of residential gas air conditioning from the entry of Arkla Air Conditioning Corp.'s year-round 3½ and 5-ton absorption units. Perfecting a direct-fired water-lithium bromide system developed by the defunct Servel group, this company, a subsidiary of a gas utility, Arkansas Louisiana Gas Co., coaxed and convinced gas utilities around the country to subsidize the merchandising of the first units produced.

Since purchasing Servel in September, 1957, Arkla has experienced a 400% increase in sales. At a projected volume of more than 10,000 units for 1960, the company's sales are 43% ahead of 1959. Geographically, the company's sales are going 35% to the southwest, 20% to the midwest, 15% to the far west, 15% to the southeast, and 15% to other areas.

Almost two years after Arkla's debut, Bryant Mfg. Co. introduced its 3-ton, ammonia-water absorption air conditioner in May, 1959. These are air-cooled water chillers for add-on applications chiefly.

Unlike the hurried field test conducted on the engine-driven units mentioned earlier, Bryant's field test was under control at all times. NEWS editors heard high praise, generally, of the pre-marketing activity of this manufacturer. By the beginning of the present season, in March, Bryant had sold 2,500 of its 3-ton units. Last month, the company introduced its 4½-ton unit. Expectations are for 4,000 unit sales through August—divided equally between the two sizes.

1960 Sales Will Be 15-17,000 Units

Arkla's and Bryant's total sales will reach 15,000 this year—far short of the 25,000 units predicted by some optimistic American Gas Association officials. (All the residential gas engine-driven equipment manufacturers, together, will produce some 1,500-2,000 units, the NEWS estimates.)

Nevertheless, acceptance of the two company's absorption units, and the likely entry of Whirlpool soon with another absorption unit, gives gas interests reason for optimism. The NEWS has found customer satisfaction very high, incidence of service quite low. Dynamic utility help in merchandising and servicing is a positive factor in the growth of gas air conditioning, as is the utilities' increasing establishment of low summer gas rates to attract cooling customers.

* * *

The picture is not all rosy, however. In its present state of development, gas air conditioning suffers from several significant disadvantages:

1) **Much of the public is not aware that gas air conditioning is available.** The NEWS talked to many potential consumers who know of electrically operated conditioners but who had never heard of either absorption or engine-driven gas equipment. The gas industry is setting about correcting this situation with heavy advertising and promotion activity in consumer media.

2) **Gas air conditioning is higher in first cost than its electrical competition.** This is true, in varying degrees, of all units, absorption or engine driven. On the other hand, operating costs are usually lower than electric competition. If annual operating hours exceed 2,000, most authorities agree, savings will amortize the first cost difference in a few years. Where operation is required only a few hundred hours, gas air conditioning is at a disadvantage.

Manufacturing costs of absorption units, a maze of welded tanks and joints, are inherently high. At least one producer has indicated that its profit margin is undesirably low. It is unlikely that even with high-volume production the cost of absorption equipment can be reduced to make the units directly competitive at first cost.

Absorption people use an additional argument to counter first cost objections; they point out that their equipment can be expected to last for 15 or 20 years, that no one component or repair job on their units can possibly approach in cost the "$100 per ton cost of replacing a compressor after five or six years."

3) **As yet, successful absorption units are available only in a few tonnages.** A 15-ton application would call for multiple installations of smaller units, with the resulting higher first cost. Gas engine-driven units are available in tonnages much

(Continued on next page)

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

WHY?
Why Does
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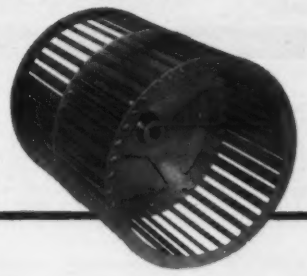

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Gas Cooling Growth--

(Continued from preceding page)

like electric-driven air conditioners.

4) **Gas air conditioners, especially absorption units, are much larger than their competitive equivalents.** Especially for indoor applications, this has led to problems in shipment, placement, and location. Even a remote unit takes up noticeably more space than conventional equipment. When multiple installations, as mentioned in item 3, are involved, the space problem approaches critical consideration.

5) **There is no hope for a gas room unit.** Even the most enthusiastic devotees of gas air conditioning can foresee no development which will enable the industry to produce small air conditioners. This important market seems perpetually closed to gas.

* * *

AGA-sponsored research may lead to unexpected breakthroughs. It is more likely, however, that the growth of the industry will depend chiefly on the improvement of existing equipment. Smaller, less expensive absorption units; quieter, more reliable engine-driven equipment will be needed to increase the gas industry's share of the central residential air conditioning market.

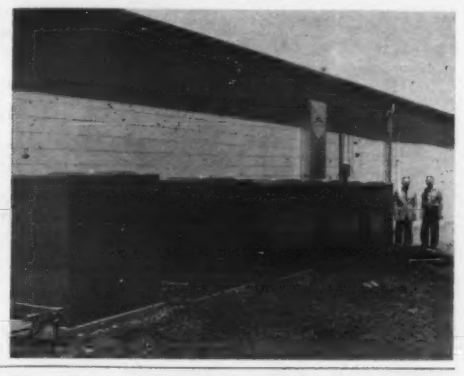
Factors To Be Considered In Gas Air Conditioner Installations

Repeatedly, as the NEWS gathered the information for this total report on gas air conditioning, it encountered statements that the installation costs for this or that gas air conditioner were exorbitant. An industry periodical published a story on the high cost of installing one of the absorption units.

The NEWS found that while there have been costly installations, these were not normal; in every case of very high installation costs, there was a readily understandable reason. In the case of the published report mentioned above, for example, the installation was the first gas air conditioner the contractor had ever worked on. He was unfamiliar with the unit and its application; the time consumed on such items as piping and electrical wiring was way out of line.

In another case, the owner of an existing old house insisted on having the absorption unit placed at a certain spot in his basement. It took almost a reconstruction job to rip out, replace, and redecorate parts of the house to get the unit where he wanted it.

REMODELED HOME in Los Angeles has an Arkla-Servel unit installed in an Old English style false chimney.



FIVE Bryant air conditioners serving a bowling alley with five horizontal water coils inside.

Nevertheless, the installation of gas air conditioning does require the consideration of factors which are not encountered in electrical installations. For this reason, many utilities insist on having a factory-trained representative of their own supervise every installation. Where practical, too, the manufacturer will supply on-the-spot installation help until the contractor becomes accustomed to the units.

From manufacturers' installation instructions, the NEWS here abstracts such factors as give an idea of the techniques used in gas air conditioning applications.

Arkla-Servel 'Sun Valley'

The index of Arkla's "Installation and Start-Up Data" for its models 500, 750, and 750H lists the following subjects under INSTALLATION: Air for Combustion, Leveling, Duct Connections, Utility Service Connections, Flue or Vent Connectors. These are in addition to the usual instructions for uncrating, locating, inspection, lubrication.

Under START-UP, Arkla mentions Pilot Flame Adjustment, Firing Rates, Burner and Pressure Regulator Adjustments, Adjusting Manifold Pressure, in addition to the usual control checks, air volume adjustment, and the like.

Page 3: Do not tip unit over from its upright position more than 45° as damage to palladium cell may result. Exception: Unit may be lowered completely on its **right side** (blower housing end) provided unit is lowered very slowly to permit solution to find its new level without splashing.

Page 5: CAUTION: DO NOT USE EQUIPMENT ROOM AS A RETURN AIR PLENUM. Single return ductwork must be tightly stubbed from unit through the wall to the grille. Improperly sealed return connections may permit products of combustion to be drawn from the flue into the fan and circulated through the conditioned space.

Page 14: Rated air volume necessary for full cooling capacity for model 500 is 1,400 c.f.m., and for models 750 and 750H is 2,000 c.f.m. In either case, during the heating season, rated air flow may produce a leaving air temperature considerably less than desired.

Rather than reduce blower speed, it may be desirable, at the time of original installation, to place a full-size damper with locking quadrant in the return duct system ahead of the air conditioner, for seasonal adjustment of air flow.

Page 24: The air volume on heating (models 500 and 750) shall be adjusted so that the maximum temperature rise, through the unit, shall not exceed 105° F. (846 c.f.m. at 120,000 B.t.u.h. gas input).

On model 750H, the air volume on heating shall be adjusted so that the maximum temperature rise, through the unit, shall not exceed 70° F. (1,905 c.f.m. at 180,000 B.t.u.h. gas input).

Bryant Model 36-450

An ammonia-water absorption unit, the Bryant unit mounts outside and circulates chilled water through the indoor coil.

Page 5: The air distribution system already installed for heating requires close inspection to determine its suitability for cooling. As a general rule, heating systems designed for 0° or lower outside temperature will need no alteration when cooling is added. In the southern portions of the country, however, the ductwork may have to be modified to include additional outlets and branch ducts.

Page 6: The unit supplies chilled water to the cooling coil and the maximum head developed by the pump limits the length of the chilled water lines between sections to 75 ft., measured along pipe path, and an elevation difference of 17 ft. measured from the base of the unit to the top of the cooling coil.

The 450 uses air for condenser and absorber cooling; therefore, it is most essential that the coil face and fan discharge be free of all obstructions. . . . A water deflector should be placed at the eaves to prevent rain run-off falling into the fan discharge opening.

Page 7: Polyethylene plastic pipe should be used (for the chilled water run to the coil) to insure a freeze-proof system. Since plastic pipe and pump are not affected by freezing, it is unnecessary to drain the water system during cold weather. Draining is required for tubing or pipe substituted for plastic pipe.

Page 9: Before selecting the size and type of pipe that is to be used for installing the 450, be sure and check with your local gas utility for the necessary information. The size of the gas pipe used will depend on the length of the run and the allowable pressure loss established by the utility.

A wrench-type shut-off valve should be installed in the gas line within sight and convenient to the 450. In many cases the gas line will be installed underground. Here again it will be necessary to check with your local utility regarding recommendation.

Page 14: CAUTION: Where "Manual" type Season Changeover dampers are used, care must be taken to ensure that the damper positions are changed whenever the System Switch position is changed. In the case of installations using automatic dampers, or motorized dampers, this precaution may be disregarded.

Weatherbuster Engine-Driven Systems

The location of the Weatherbuster condensing unit should be as near the evaporator coil as possible. . . . Indoor installation must be avoided.

The exhaust muffler which is supplied with this condensing unit must not be installed inside the condenser enclosure.

Gas piping should be sufficient to supply not under 4 oz. of pressure and over 8 oz. at the Weatherbuster regulator.

Ready-Power Engine-Driven Systems

Exhaust mufflers should preferably be mounted out of doors and as close to the engine as possible. Mufflers give off considerable heat; therefore, if they **must** be mounted indoors, some provision must be made to exhaust the heat and to shield adjacent combustible materials from the heat.

Keeping the muffler close to the engine will prevent "pipe bang" effects which sometimes occur when the muffler is located at the end of a long exhaust line. Try to keep the muffler within 30 ft. of the engine.

(Most of the Ready-Power instructions are concerned with the compressor-side of the system, and these instructions are identical to those for any compression refrigeration cycle.)

Installations of large-tonnage equipment, of course, are custom designed for specific structural and architectural conditions.

CLASSIFIED ADVERTISING

RATES for "Positions Wanted" $7.50 per insertion. Limit 50 words. 15¢ per word over 50.

RATES for all other classifications $10.00 per insertion. Limit 50 words. 20¢ per word over 50.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other address by actual word count. Please send payment with order.

POSITIONS WANTED

IF YOU are a manufacturer in need of excellent representation in the Metropolitan N. Y. area let me hear from you. Have the personality, experience and contacts among the refrigeration wholesalers, OEM's and major contractors. Must be top quality product or products for the air conditioning or refrigeration industry. ROOM 3411, 233 Broadway, N. Y., N. Y.

SERVICE AND installation manager, age 46, married, now employed. Qualified to take complete charge of all phases of service, installation, warehouse, stockroom, service contracts and service training program. Resume sent upon request. BOX A6554, Air Conditioning, Heating & Refrigeration News.

POSITIONS AVAILABLE

ATTENTION FIELD service men: Fedders Corporation has an opening for district service manager in Midwest region. Must have experience in central heating and cooling service, installation and application. Willing to relocate, if necessary. Submit your resume to: Sil Thompson, c/o FEDDERS CORPORATION, 58-30 Grand Avenue, Maspeth 78, New York.

APPLIANCE FIELD service representatives. Full line experience wanted, refrigeration experience especially desirable. Must be able to travel and relocate if necessary. General knowledge of appliance service business helpful. Very liberal benefit program and management bonus. Submit resume to E. E. Emerson, Corporate Personnel Office, WHIRLPOOL CORPORATION, St. Joseph, Michigan.

SERVICE SUPERVISOR to headquarter in Pittsburgh, Pa. with nationally recognized manufacturer of air conditioning equipment 2 - 125 tons and residential heating. To train distributor/dealer personnel, process warranty claims and trouble shoot where necessary. College education. 3-5 years experience. Limited travel. Excellent opportunity. Submit resume to BOX A6556, Air Conditioning, Heating & Refrigeration News.

DIRECT SALES representative — The man we are looking for is currently contacting OEM accounts in refrigeration and air conditioning. Mechanical engineering background desired but not required. This man should be capable of designing complete refrigeration systems. Relocation not necessary. Please submit resume and salary required to BOX A6558, Air Conditioning, Heating & Refrigeration News.

EQUIPMENT WANTED

USED AND repairable or new compressors and condensing units above 5 h.p. Also need surplus parts for G. E., Brunner, Copeland, Mills, Worthington, Par, etc. Give full descriptions and part numbers. Don't junk it; we'll buy it. UNITED REFRIGERATION CORPORATION, 514 W. 12th St., Los Angeles 15, California.

EQUIPMENT FOR SALE

EMERY THOMPSON and Mills ice cream freezer each 5 gals. One low temperature Recoid coil model 144LT. One 3 h.p. Frigidaire compressor, 75 wire baskets. 200 — 2½ gal ice cream cans. FOOTHILL CREAMERY, 1000 Alum Rock Ave., San Jose, Calif.

ATTENTION REFRIGERATION Servicemen: Send for catalog listing values in refrigeration and air conditioning parts, relays, capacitors, compressors. Savings up to 50%. WALTER W. STARR, 2833 Lincoln Ave., Chicago 13 Illinois.

BUSINESS OPPORTUNITIES

AIR CONDITIONING, heating,—ventilating business for sale; Detroit area. Owner retiring. Old reputable contract and service business, commercial and industrial. Attractive terms to qualified buyer. Unusual opportunity. Samuel B. Keene, Attorney, 2320 Guardian Bldg., WO 1-0775.

FLORIDA OPPORTUNITY for experienced service firm operator to invest $15,000 to $25,000 for equal partnership in old established company whose expanding business requires more manpower at management level. Not a distress sale. All replies strictly confidential. Write BOX A6555, Air Conditioning, Heating & Refrigeration News.

COMMERCIAL REFRIGERATION and air conditioning service business, well established in Southern California's San Fernando Valley for sale by owner, including trucks, inventory and equipment. This is a growing and profitable business for a man who knows the service business. Price $12,000.00. Write BOX A6557, Air Conditioning, Heating & Refrigeration News.

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Your inquiries invited.

Bonded Hermetic Re-Mfg. Co.
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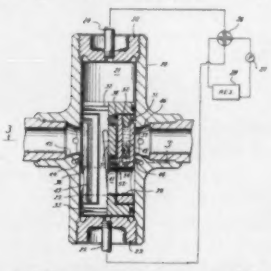
Brooklyn 18, N. Y.

PATENTS

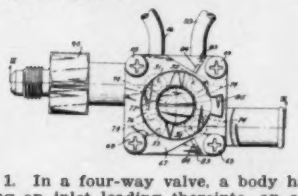
Week of Dec. 29 (Concluded)

2,918,935. MULTI-WAY VALVE WITH PLASTIC SEALS. Robert L. Ohls, Houston, Texas, assignor to Mission Mfg. Co., Houston, Texas.



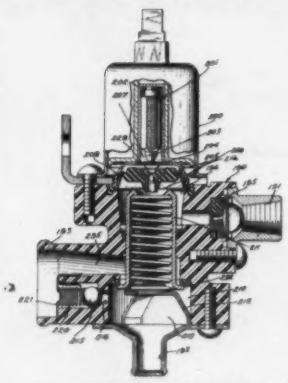
1. A three way valve comprising, a body having a cylindrical bore therein, three flowways opening into the bore, with two of the flowways opening into the bore at longitudinal spaced points, a slide valve member having a flowway therethrough positioned in the bore and directing flow alternatively through the longitudinally spaced flowways, an arcuate packing groove in the body and opening into the bore, said groove extending circumferentially of the bore between the longitudinally spaced flowways. . . .

2,918,936. LIQUID METERING DEVICE AND CONTROL VALVE THEREFOR. Robert H. Dawson, Chicago, Ill., assignor to The Dole Valve Co., Chicago, Ill.



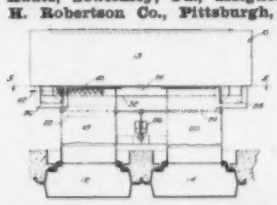
1. In a four-way valve, a body having an inlet leading thereinto, an outlet leading therefrom spaced laterally from said inlet and extending parallel with respect thereto, two pressure passageways associated with said inlet and opening to an outer face of said valve body, two other pressure passageways associated with said outlet in alignment with said first mentioned passageways and opening to the same outer face of said valve body as said first mentioned passageway. . . .

2,918,937. ACTUATING VALVE. James A. Kozel, Chicago, Ill., assignor to The Dole Valve Co., Chicago, Ill.



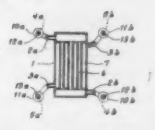
1. In combination with a pressure actuated device, means defining a pressure chamber, inlet means for accommodating supply of fluid to said pressure chamber, outlet means for accommodating delivery of fluid from said pressure chamber to said pressure actuated device, exhaust means for accommodating exhaust of fluid from said outlet means and from said pressure chamber. . . .

2,919,068. THERMOSTATICALLY CONTROLLED OUTLET BOX. Glenn E. Kautz, Sewickley, Pa., assignor to H. H. Robertson Co., Pittsburgh, Pa.



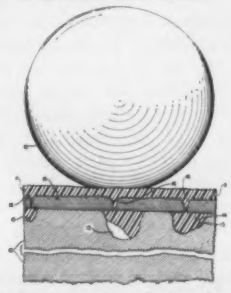
1. An outlet box for an air conditioning system in a building comprising a box providing a mixing chamber and having a discharge outlet in the upper wall thereof, two air supply conduits leading into the lower wall of the box and through which hot and cold air respectively flow to be mixed in the mixing chamber, dampers in each conduit for controlling the air flow therethrough. . . .

2,918,114. INDIRECT HEAT EXCHANGER. Ake Birger Ljungstrom, Stockholm, Sweden, assignor to Aktiebolaget Rosenblads Patenter, Stockholm, Sweden.



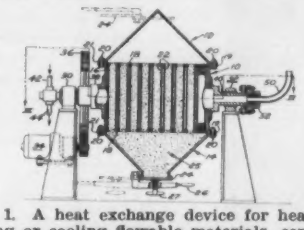
Arrangement in indirect heat exchangers comprising in combination two separate passage systems for two heat exchanging media, a first inlet and a first outlet for one of said passage systems firmly connected to the heat exchanger and at opposite sides thereof, a second inlet and a second outlet for the other passage system firmly connected to the heat exchanger and at oppositely sides thereof, four detachable pipe connections for connecting the individual inlets and outlets. . . .

2,919,115. IMPREGNATED POROUS CONDENSER SURFACES. Luther E. Vaaler, Columbus, Ohio, assignor, by mesne assignments, to The Griscom-Russell Co., Massillon, Ohio.



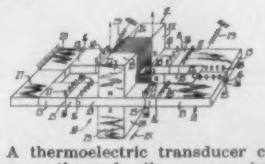
1. A heat-transfer device in which a condensable vapor is separated from a cooling fluid, comprising a wall for separating the cooling fluid from the condensable vapor, the condensing surface of said wall being provided with a film of dropwise condensation promoting material. . . .

2,919,116. BLENDING AND HEAT EXCHANGE MILL. John J. Fischer, East Stroudsburg, Pa., assignor to The Patterson-Kelley Co., Inc., East Stroudsburg, Pa.



1. A heat exchange device for heating or cooling flowable materials, comprising a casing having a portion with tube means extending therethrough and normally closed mixing chamber portions at the opposite ends thereof. . . .

2,919,356. THERMOELECTRIC TRANSDUCER. William J. Fry, Urbana, Ill.



2. A thermoelectric transducer comprising a thermal pile; means intermittently short-circuiting the output of said thermal pile; magnetic field-producing means having poles directed toward a movable portion of said thermal pile whereby said movable portion reacts with the field to cause relative motion; and resilient means urging said movable portion in a direction opposite to that produced by the reaction of said movable portion with said field; whereby said movable portion of the thermal pile is caused to vibrate at a frequency corresponding to the rate of operation. . . .

the Q's and A's of

AIR ENGINEERING

Q THE PROFESSION: *What is air engineering? What does it mean to you?*

A Air engineering is the art and science of managing air to make it useful and healthful for man in structures and manufacturing processes.

Q THE MAN: *Who is the Air Engineer? What does he do?*

A He is a member of an increasingly vital profession. He deals with problems of air. He is involved wherever combustion, chemical or mechanical processes or natural causes create smoke, dust, heat, cold, fumes or odors hazardous or annoying to personnel or the community or damaging to property or products. Air Engineers as a group are men of many titles. The Air Engineer may be any one of these . . .

- *an engineer or executive* in an industrial plant or commercial establishment, a utility or an institution in which his primary function is the handling and treatment of air.
- *an industrial hygienist* concerned with the reduction of airborne hazards to the health of personnel.
- *a registered consulting engineer or architect* concentrating on the problems of air in new or existing facilities.
- *a mechanical contractor* specializing in air handling installations.
- *a Government authority* cooperating with industry to effect compliance with codes and regulations governing the purification of air.

Q THE MAGAZINE: *How does it serve the profession?*

A *AIR ENGINEERING* is the only professional magazine dedicated to helping the Air Engineer fulfill his vitally important mission of creating pure air environment.

AIR ENGINEERING'S editorial objectives are, in brief: 1) to give readers up-to-date, practical working information useful in coping with air problems and 2) to bring together in closer communication fields and industries concerned with the handling and treatment of air.

Another, and valuable function of *AIR ENGINEERING* is to help you, the manufacturer, move equipment and materials in this important, dynamically-developing field.

Air Engineers *specify, recommend, select and purchase* a wide array of products having to do with AIR MOVING, AIR CONDITIONING and AIR PURIFICATION. If your product relates to one or more of these functions, your advertising in *AIR ENGINEERING* will be closely read by an interested, receptive audience of more than . . .

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Publishers of "Air Conditioning, Heating & Refrigeration News"

CONSULTING ENGINEERS COUNCIL newly-elected officers look over program for annual banquet. Seated left to right George J. Toman, secretary; Hueston M. Smith, president; Harold P. King, first vice president; Frederick K. Steel, second vice president. Standing left to right, Lester L. Bosch, treasurer and Ralph M. Westcott, immediate past president.

C. E. C. Meeting --

(Continued from Page 1, Col. 3)

also covered.

C.E.C. directors also discussed and approved four new C.E.C. engineer-architect, and principal engineer-associate engineer forms of contract. Already available to council members are recommended forms of contract for use in owner-engineer, and architect-engineer agreements. Presenting the new forms was Documents Committee Co-Chairman George W. Poulsen, Jr. of Salt Lake City, who reported that demand for previously published standardized forms of advertisement, information for bidders, proposal, agreement, bid bond, performance bond, labor and material bond, and general conditions of the contract, had necessitated a complete reprinting.

C.E.C. Treasurer Lester L. Bosch, Cincinnati, presented the first draft of a proposed indexing system for manufacturers' catalogs and technical literature. It is the intention of the council to prepare a streamlined filing system which will eventually be available for use not only by C.E.C. members, but by the manufacturers as well.

Recent recriminations of consultants by certain agencies of the Federal government came in for considerable attention from the C.E.C. board. Outgoing President Ralph M. Westcott, Los Angeles, reported that the council has established an emergency committee to challenge accusations that "use of consulting engineers costs more."

According to Westcott (who, in April, reported the consultants' viewpoint to the Appropriations Sub-committee of the House Public Works Committee), the records show that engineering costs on projects utilizing only private firms are invariably lower than the design costs on similar projects handled by public engineering bodies.

In voicing the consultants' rebuttal to government "high cost" claims, the council is assuming the role of spokesman for both C.E.C. members and non-members, it was reported. This is evidenced by the inclination of outsiders, as well as members, to participate financially and vocally in the council's emergency program, it was stated.

Quick action was taken on a report by the Gulf Institute of Consulting Engineers to the effect that Civil Service personnel in Louisiana are pressuring registration officials for "easy" registration under a special legislative ruling. In a matter of hours, the council adopted a resolution stating in part:

"Any circumvention of proper qualifications of persons authorized to practice engineering will seriously endanger the public health, safety, and welfare. . . . The potential dangers to the public health, safety, and welfare should be clearly brought to the attention of all proper authorities, including public officials, legislators, and civic leaders. . . ."

Harold P. King, C.E.C. vice president from Sherman Oaks, Calif., told the board that Landrum-Griffin amendments—SB 2634 and HR 9070—(pending before Congress), if adopted, will permit a complete work stoppage at construction project sites for no other reason than the fact that employes of one of the subcontractors are non-union. This was interpreted by the C.E.C. board to include design subcontractors, which could lead to attempts to force unionization on private engineering firms. Telegrams to Congressmen were dispatched by all present, and a condemning resolution authorized for submission to the proper authorities.

Reports presented by a number of state associations revealed some of the local problems and situations being encountered by consulting engineers.

Iowa Director Sanford Fosholt reported that in his state consultants are facing a situation in which city planners are attempting to obtain special registration separate from that of civil engineers.

South Dakota Delegate John H. Reese (who, along with delegates from New Jersey, Massachusetts, and Maryland, represented a new member of the council) described the activities of consulting engineers in his state in resolving an especially ticklish situation of "side line engineering" by college professors.

Horace Whitacre of Seattle reported on his group's battle against corporate practice measures proposed by a committee on engineering law. Council support of the Washington Association stand was extended by the board.

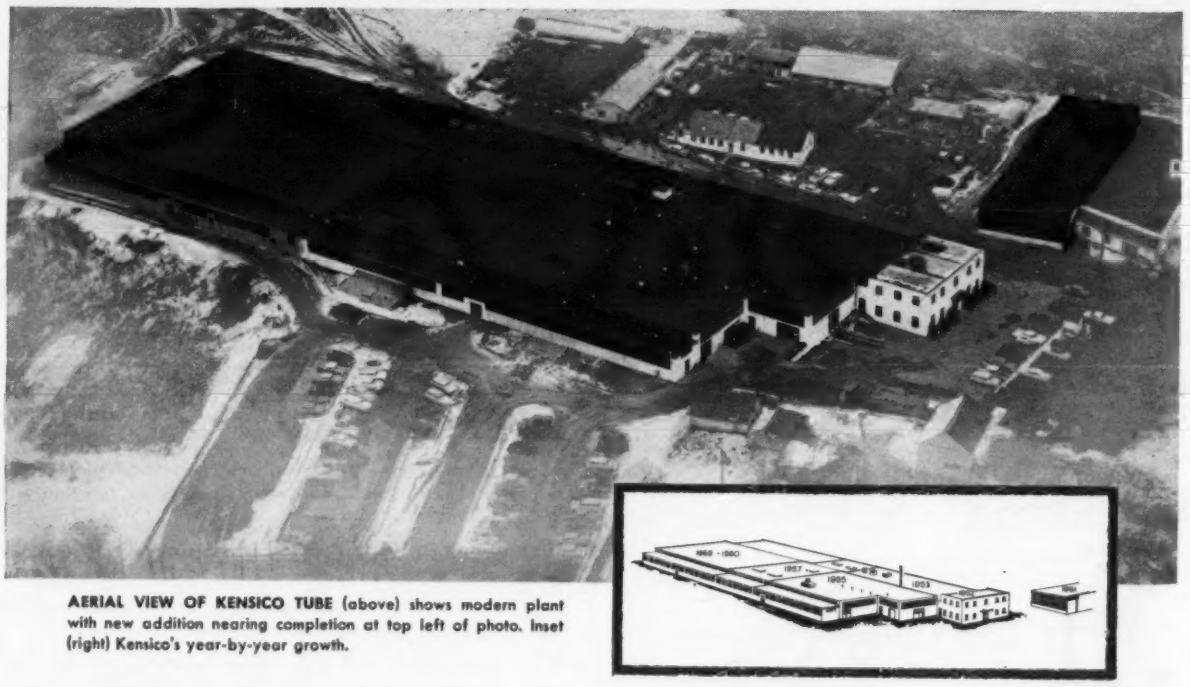
The committee which developed the Manual of Consulting Engineering Practice reports that it intends to utilize appropriate suggestions and committee reports in adding to, and reviving future editions. In the present form, the handling of bids, free engineering, kickbacks, "moonlighting," and problems of engineer-constructors are covered. The section on organization and operation of a consulting practice discusses fees, employe relations, insurance, negotiations, and offers a detailed accounting system.

New president of the C.E.C., succeeding Westcott, is Hueston M. Smith, head of Smith-Hanlon-Zurheide-Levy, Inc., St. Louis civil, structural, mechanical, electrical, and industrial engineering firm.

Delegate to the 1960 meeting of the International Federation of Consulting Engineers is Edward J. Wolff, Chicago, with William W. Moore, Los Angeles, as alternate.

The next (semiannual) meeting of the C.E.C. will be held Nov. 10, 1960 at Pittsburgh.

SET FOR THE SOARING SIXTIES



AERIAL VIEW OF KENSICO TUBE (above) shows modern plant with new addition nearing completion at top left of photo. Inset (right) Kensico's year-by-year growth.

PACE-SETTER during a period of phenomenal growth in northern Westchester County, N. Y. Kensico Tube is Mt. Kisco's largest manufacturing business. Products include: hard and soft copper water tube; copper air conditioning, refrigeration and instrumentation tube; and copper tubing for propane gas lines, heat exchangers, automotive and industrial applications. Now, after more than a decade of corporate growth and expansion of production and marketing facilities, Kensico is set to meet the challenge of the SOARING SIXTIES.

IN 1950, CONSTRUCTION of first new building was started. Kensico had been chartered under N. Y. State Law in 1945. Under present management since 1948. Until 1951, company was located in an old cider mill which it leased (floor space 8500 sq. ft.).

TODAY, AFTER PUTTING UP 4 MORE ADDITIONS, Kensico has more than 60,000 square feet of modern fireproof plant and office space.

BY SPRING, 1960, Kensico expects to complete a new 40,000 square foot addition to the plant. Total plant and office space will then exceed 100,000 square feet.

PRODUCTION HAS INCREASED with each addition since 1950. It will be still further increased in both capacity and range of sizes by the new 1960 addition.

IN THE TEN YEAR PERIOD, 1950-1960, Kensico has had a 7-fold growth in gross sales.

EFFECTIVE FEBRUARY 1st 1960, Kensico Tube Company Incorporated, Mt. Kisco, N. Y., merged with Robinson Technical Products, Inc., Teterboro, N. J. Robinson also has other corporate facilities at Hingham, Mass., and Santa Monica, California. The merger strengthens Kensico's position in engineering and metallurgy and places new technological know-how and experience at the disposal of Kensico's customers. Kensico's new name is KENSICO TUBE COMPANY DIVISION — ROBINSON TECHNICAL PRODUCTS, INC.

Kensico Tube
COMPANY DIVISION
Robinson Technical Products, Inc.

MOUNT KISCO, NEW YORK

Kensico Products are also Available Through Warehouse Distributors and Sales Representatives in Cambridge, Mass.; Middlebury, Conn.; Buffalo, N. Y.; Lindenhurst, N. Y.; Goshen, N. Y.; Roselle, N. J.; Philadelphia, Pa.; Flourtown, Pa.; Pittsburgh, Pa.; Cleveland, Ohio; Detroit, Mich.; Evanston, Ill.; St. Louis, Mo.; Milwaukee, Wisc.; Durham, N. C.; Berwyn, Ill.; Ft. Lauderdale, Fla.; St. Petersburg, Fla.